NETWORK WORLD
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Infonet airs global LAN link service

By Barton Crockett
Senior Editor

EL SEGUNDO, Calif. — Infonet Services Corp. next month will introduce a public internetworking service designed to give users a high-speed alternative to private networks for linking LANs around the world.

With the turnkey Infolan offering — through which Infonet will supply equipment and transmission services — users will be able to interconnect local-area networks at speeds between 9.6K and 2.048M bit/sec. Internet traffic will be supported by a router subnet on Infonet's global T-1/European T-1 backbone.

Observers say Infolan could take off because it lets users link geographically dispersed networks with fewer headaches than private nets and at faster speeds than X.25 offerings. The service also offers advantages over emerging but unproven frame relay services.

"It's almost going to be up to Infonet to be quiet about this in order not to draw too many competitors," said Joaquin Gonzalez, vice-president and director of global network strategies at the META Group, a consultancy in Westport, Conn. "It's going to be

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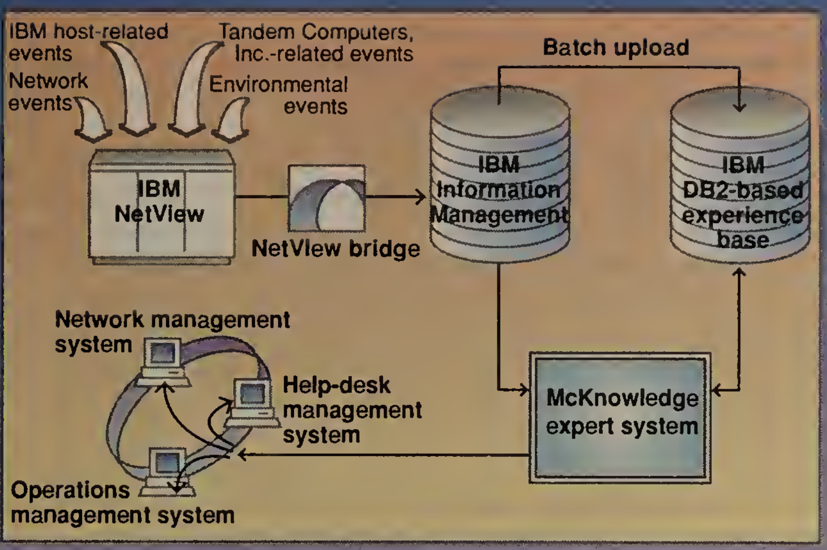
McKnowledge captures experts' knowledge


IBM host-related events
Network events
Tandem Computers, Inc.-related events
Environmental events
IBM NetView
NetView bridge
IBM Information Management
Batch upload
IBM DB2-based experience base
Network management system
Help-desk management system
Operations management system
McKnowledge expert system

McKesson's McKnowledge expert system feeds off a constantly growing experience base to speed problem resolution. Information about events and how they were handled is automatically passed to the experience base for use by network, systems and help-desk personnel.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: MCKESSON CORP., SAN FRANCISCO

McKesson expert net tool just keeps getting smarter

By Paul Desmond
Senior Editor

SAN FRANCISCO — McKesson Corp. is developing an expert system that will not only help to quickly resolve network and systems management problems, but will also become more powerful over time by automatically learning from new experiences.

When a problem arises, McKesson's McKnowledge system works hand-in-hand with IBM's NetView and Information Management problem management data base to give network and help-desk operators historical information on problems and how they were resolved. Armed with that information, operators will be able to automate responses to common problems.

McKnowledge, now in the pilot stage but expected to be in production by year end, will be used to manage McKesson's nationwide very small aperture terminal-based Systems Network Architecture network, as well as environmental monitoring systems and a complex of Tandem Computers, Inc. machines.

Bud Turner, director of data

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Chevron builds LAN future on NetWare

Will favor Novell's product in future acquisitions over LAN Manager-based offerings, even IBM's.

By Timothy O'Brien
West Coast Bureau Chief

SAN FRANCISCO — Chevron Corp. is expected to announce this week at a conference of its domestic personal computer coordinators that it has selected Novell, Inc.'s NetWare as the LAN operating system of choice for future acquisitions.

According to a source within Chevron Information Technology Corp., a subsidiary that provides information processing services to Chevron, the decision was made after a 1½-year evaluation of NetWare and Microsoft Corp. LAN Manager-based products, including IBM's LAN Server.

The official acknowledged that Chevron has been a staunch IBM shop and that although NetWare was chosen on its own merits, it might not have been accepted by management without IBM's endorsement. In a major departure from its previous strategy, IBM announced last February it would resell NetWare and work with Novell on joint marketing and development.

Chevron is one of the many users whose local-area network buying decisions are expected to be influenced by the IBM-Novell partnership.

Chevron has approximately 20,000 personal computers and estimates that about half are networked today. The compa-

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INSIDE

PHOTO ©1991 RICHARD PASLEY

Hub highway job a challenge for N.E. Tel, page 2.

Early user lauds frame relay service

By Bob Wallace
Senior Editor

DALLAS — Convex Computer Corp. last week said it is migrating from a private T-1 network to a hybrid public/private frame relay network anchored by WilTel's new frame relay service.

Dubbed WilPak, the service has enabled Convex to cut monthly leased-line charges, more efficiently interconnect geographically dispersed Ethernet local-area networks and provide faster access from remote sales offices to supercomputers on its network.

"The WilPak service has performed flawlessly since we began using it two months ago," said Coyne Gibson, Convex's MIS computer operations manager.

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NETLINE

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USERS DISCUSS MIGRATION strategies at North American Open Systems Conference. Page 3.

DEPT. OF DEFENSE reveals plans for innovative procurement network. Page 4.

IBM STOPS SELLING PROFS and is working to ready users for migration to OfficeVision. Page 4.

AT&T, MICROSOFT UNIFY strategies on LAN Manager for Unix. Page 4.

NORTHERN TELECOM SET to unveil new low-end digital PBX at upcoming ICA conference. Page 6.

STARTING THIS WEEK, NW cracks open "In a Nutshell," complex technologies explained briefly. Page 51.

NEWSPAPER

FEATURE

Virtual nets go global as features proliferate

By Daniel Briere
Contributing Editor

Virtual networks are used almost everywhere these days. Introduced in 1985, these high-end, software-based long-distance services have been growing at a phenomenal pace.

"Traditionally, in the long-distance industry, it has taken 16 years to build a $1 billion segment in the market. Virtual networks [made $1 billion] in less than five years, at a time when rates were falling dramatically," says Marcus Canipe, director of product marketing for US Sprint Communications Co.

Carriers have positioned virtual network services both as complements to and replacements for private leased-line networks. With the addition of higher speed switched digital transmission capabilities to the carriers' service offerings, virtual net services can now carry voice, data, video and image traffic.

By year end, AT&T will offer switched data transfer rates of up to 1.544M bit/sec as part of its virtual network service. And

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New Verity software eases remote document access

Firm also upgrades client/server software to let users quickly locate locally stored information.

By Jim Brown
Senior Editor

MOUNTAIN VIEW, Calif. — Verity, Inc. last week introduced software that makes it possible to link its LAN-based document retrieval systems, enabling users at one location to find and download documents stored at others.

TOPIC Partition Server enables users on a variety of workstations to search through remote directories listing documents that contain certain key words or specific topics. The software will also retrieve documents from a remote server and reformat them for display on a client workstation running TOPIC Version 3.0.

Verity last week also announced TOPIC 3.0, an enhanced version of the company's client/server software that makes it easier for users such as researchers and customer service representatives to quickly locate locally stored documents.

Users and analysts agree TOPIC Partition Server will now make it easier to retrieve remote documents that cannot be stored in traditional data bases.

In fact, data base management system vendor Borland International, Inc. plans to use TOPIC Partition Server to enable customer service representatives around the world to tap into

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Major hgwy. project forces N.E. Tel to build fiber net

Boston reconstruction means relocating circuits.

By Bob Brown
Senior Editor

BOSTON — The kickoff last week of a 10-year, $5.4 billion highway construction project here also signaled the start of what New England Telephone and Telegraph Co. officials are calling the single biggest carrier network project ever undertaken.

The Central Artery/Third Harbor Tunnel project, which got the go-ahead from the Federal Highway Administration last week, calls for a major interstate highway that passes through the heart of Boston to be replaced with an underground thoroughfare. It also includes building a new tunnel under the harbor to Boston's Logan International Airport.

Nothing lasts forever

In the 1950s, Central Artery engineers promised New England Telephone that the newly built highway would serve Boston's roadway needs forever. But the carrier, which laid a massive network of cables beneath the artery when it was constructed, must now begin a $40 million relocation and upgrade of interoffice and local loop circuits.

These network facilities, which handle 17 million calls a

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McDATA touts flexibility of new cluster controllers

By Paul Desmond
Senior Editor

BROOMFIELD, Colo. — McDATA Corp. today will announce a new family of IBM-compatible cluster controllers that will support up to twice as many terminals as equivalent IBM controllers and enhance McDATA's support for Digital Equipment Corp. VAX machines.

McDATA's new LinkMaster 7100 Network Controller family includes two machines that can be configured as local or remote controllers and a third that can only be used remotely.

The company claims the 7100s are more flexible than comparable IBM controllers. All three of the machines, for example, can be used stand-alone or can be mounted on a rack, and the local controllers can be used with copper bus/tag channel cables or upgraded to support IBM's new Enterprise System Connection (ESCON) fiber-optic channel architecture. IBM controllers only support one or the other.

The new models include the 7100 Model 10 and 20, both of which are remote controllers that can be upgraded with channel adapters to become local controllers, and the 7100 Model 60R, which can only be used remotely.

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Briefs

NW launches new test series. Look for the first article of *Network World*'s Network Test Series in next week's issue. In the premier trial, *Network World* — in cooperation with Enterprise Technology Center, Inc., of Houston — puts routers through their paces in a test involving use of two protocols and simultaneous transmission of packets in two directions. Future tests will evaluate such areas as data base software to 10BaseT hardware.

Supporting FDDI over twisted pair. Five vendors, including Chipcom Corp., Digital Equipment Corp. and SynOptics Communications, Inc., are expected this week to announce development of technology that will enable desktop workstations to use shielded twisted-pair wire instead of fiber to connect to Fiber Distributed Data Interface backbones at 100M bit/sec. The vendors will agree to a common implementation of the technology, which, for example, will enable Chipcom's twisted-pair network interface boards to connect directly into a DEC FDDI concentrator.

COS announces new president. Last week, the board of directors for the Corporation for Open Systems International (COS) elected Steve Hudson, formerly the group's executive vice-president and chief operating officer, to be president and chief executive officer. Lincoln Faurer, the current COS president, had earlier announced plans to retire.

During the board meeting held in Vancouver, Hudson said COS plans to launch a quarterly business periodical on open systems and have an Integrated Systems Digital Network conformance test program by year end.

In a separate action at the International Standards Organization/International Electrotechnical Commission conference on World Recognition of Test Results held last week, COS announced the formation of the U.S. Open Systems Interconnection Testing and Certification Policy Council. The council will strive to coordinate a common U.S. position on standards by creating a set of policy statements relating to OSI testing and certification.

Fuji Bank makes HP net deposit. Fuji Bank, Ltd. last week said Hewlett-Packard Co. was selected to build a $7 million system based on an Ethernet backbone at its headquarters in Tokyo. HP will install its EtherTwist local-area network hardware and software and a number of Unix-based HP 9000 Series 800 minicomputers and HP 700/X workstations running the X Window System. Fuji Bank will also use HP's OpenView integrated network management system to manage both the network and the attached systems.

Virtual net service slated in Japan. Japan's leading international carrier, Kokusai Denshin Denwa, Ltd. (KDD), last week said it plans to begin offering an international virtual network service, called Virnet, to the U.S. beginning June 1. Virnet supports abbreviated corporate dialing plans and offers a 7% discount over standard international direct-dial long-distance charges. Initially, KDD will link its Virnet service with AT&T's Global Software-Defined Network service. Japan's other major international carriers, International Digital Communications, Inc. and International Telecom Japan, Inc. are also expected to roll out international virtual net services.

Pacific fiber cable goes live. Service commenced last week on the North Pacific Cable (NPC), the second fiber-optic link between the U.S. and Asia, according to Japanese carrier International Digital Communications, Inc., which controls Japan's half of the cable. NPC will enable users for the first time to establish redundant fiber-optic links to Asia.

Rolm to sell MCI services. MCI Communications Corp. last week signed an agreement that will enable Rolm Co. to sell a variety of the carrier's long-distance calling services with its 9751 CBX private branch exchange line. The program will enable Rolm to offer customers a single point of contact for switching equipment and network services. Under the program, customers who buy MCI Card calling card services from Rolm receive a 26% discount on domestic calls and a 6% discount on international calls. Companies that buy MCI Prism 1 receive discounts of 10% on domestic and international standard rate calls. Users that buy MCI 800 service receive discounts of 15% to 23%.

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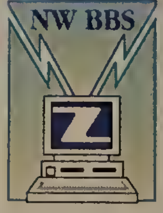

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Conference-goers look for interoperability answers

By Ellen Messmer
Washington Correspondent

VANCOUVER — The meeting here last week of the North American Open Systems Conference drew a crowd of network managers from across Canada and the U.S. seeking answers to their systems interoperability problems.

Among the roughly 200 people attending the conference, the most common question asked was how to migrate proprietary networks to nets based on Open Systems Interconnection. Both users and vendors gave opinions, which included clues on the broad network strategies of IBM.

The Boeing Co., a strong advocate of OSI, sent several members of its Boeing Computer Services Co. division to speak at the conference, which was cosponsored by the User Alliance for Open Systems, The OSI/Network Management Forum, OSINET, Transport Canada and the Canadian Interest Group on Open Systems.

One speaker, Paul Schachter, a systems analyst at Boeing, outlined the aircraft manufacturer's long-term commitment to migrating its various Transmission Control Protocol/Internet Protocol, IBM Systems Network Architecture and Digital Equipment Corp. networks to OSI.

Speaking on the subject of migrating TCP/IP to OSI, Schachter conceded, "We really haven't figured out the coexistence of TCP/IP and OSI. We're learning as we go along."

Boeing has developed a test network running parallel to its production networks to experiment with OSI applications, such as X.400 and File Access, Transfer and Management (FTAM).

Although Boeing installed an X.400 gateway to connect its electronic mail system to suppliers outside the network, the company is refraining from installing X.400 on the Boeing production net until positive results from the experiments warrant a go-ahead.

Experience has led Boeing to view X.400 gateways as only a transitional solution at best, Schachter said. One of the problems with gateways is that network management is hindered because the gateways convert protocols for transmission across different network segments.

Boeing is also discouraging other migration approaches, such as tunneling — the encapsulation of TCP/IP packets in OSI envelopes for transmission across OSI transport networks or vice versa.

"It's inefficient," Schachter said. Each end system must be modified to support the process, which is not a standards-based solution.

While Boeing is still reviewing transition options, it is leaning toward the idea of adopting lower lever OSI transport protocols and maintaining multiple upper layer protocol stacks. In this scenario, the upper layer protocols would be migrated to OSI as well.

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Corrections: The May 6 article "Digital-on-demand service introduced by WorldCom" incorrectly stated Italcable's hourly charge for T-1 bandwidth to Italy. The correct figure is 1.7 million lire ($1,312 U.S.).

The telephone numbers for the Spartacus, Inc. division of Fibronics International, Inc. and Central Point Software, Inc. were given incorrectly in two recent stories. The correct number for Spartacus is (508) 937-1600, while Central Point Software's phone number is (503) 690-2650.

The "Packet switching speeds up" Buyer's Guide (*NW*, May 6) misstated the circuit capacity of one of Dynatech Communications, Inc.'s X.25 packet switches. The CPX 20 can support four 64K bit/sec circuits as shipped and up to 20 64K bit/sec circuits with additional line cards.

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IBM forms business unit to focus outsourcing efforts

Company will offer data processing, other services.

By Wayne Eckerson
Senior Editor

WHITE PLAINS, N.Y. — In an effort to compete more effectively for outsourcing business, IBM last week announced that it had formed a new wholly owned subsidiary that will provide a range of outsourcing services, from disaster recovery to application development.

The move is designed to give IBM's outsourcing group greater autonomy to respond more quickly and cost-effectively to customers' needs. The new subsidiary, called the Integrated Systems Solution Corp. (ISSC), replaces IBM's Systems Services Division, which was formed last fall after another reorganization.

New offerings

The move enables IBM to remain in full compliance with the provisions of a consent decree it signed with the U.S. government in 1956, which stipulates that IBM can only offer data processing services through wholly owned subsidiaries.

As a result, ISSC will now be able to offer customers a variety of data services that IBM had previously never provided, including check processing, travel reservation processing and fee-based report generation. IBM officials said customers have increasingly asked IBM to supply these services.

Besides those offerings, ISSC will provide data center outsourcing as well as help-desk services and systems integration.

ISSC personnel from the Systems Services Division will change little. Dennie Welsh, who headed up at division, will be assume the position of ISSC president and chief executive officer, and the Systems Services Division's 5,000 workers will compose ISSC's work force.

The benefits

The new arrangement frees ISSC from having to pay certain overhead costs for shared staff and other items that are charged to all IBM divisions. This will reduce ISSC's costs and help it make more competitive bids, Welsh said.

In addition, as a wholly owned subsidiary, ISSC will be free to structure bids as it sees fit without having to go through formal channels within IBM. This will help ISSC deliver bids in a more timely and cost-competitive manner, Welsh said.

Jeff Kaplan, a director at the market research firm Ledgeway/Dataquest in Lexington, Mass., said the new subsidiary will effectively unleash entrepreneurial energy that IBM needs to compete more effectively in the growing outsourcing market.

Kaplan also said the move in part is an attempt by IBM to relieve the concern of potential outsourcing customers that the company views outsourcing as a vehicle to sell more hardware.

As a wholly owned subsidiary, such as IBM Credit Corp., ISSC will purchase IBM equipment at full-market value, as its outsourcing competitors do.

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U.S. Defense Dept. to test on-line purchasing system

By Maureen Molloy
Staff Writer

WASHINGTON, D.C. — The U.S. Department of Defense is expected this summer to pilot-test a new electronic procurement system designed to streamline the purchase of millions of products used by the military.

The agency plans to establish an electronic bulletin board system on which it will post requests for quotation (RFQ) for some four million products costing less than $25,000. Suppliers will be able to access the bulletin board through a variety of value-added networks (VAN) to monitor postings and submit bids.

The system will speed up the procurement process and open it up to more suppliers by making it easier for smaller businesses to participate. That increased competition is expected to drive down the prices the agency pays for products.

"We've had many complaints from suppliers who say that it's too cumbersome to do business with the government," said Jack Bartley, director of the Defense Department's Electronic Commerce Initiative. "Our aim is to change that. The DOD wants to give all suppliers, big and small, the ability to easily submit bids."

Under the current manual system, vendors looking for opportunities to submit bids on anything from aircraft parts to food supplies must dispatch representatives to a Defense Department site, such as a military base, to peruse paper items posted on a bulletin board.

Using the new system, the agency will download a data base of all RFQs daily to the VANs supporting the bulletin board service. A supplier will be able to dial into the system and identify the items it wants to bid on. The VAN would then download the RFQs to the vendor's computer in ANSI X12 format.

After the supplier generates and submits bids via the VAN, the agency would make its selection and issue an electronic purchase order to the chosen supplier.

Five major VANs have expressed interest in supporting the service. The Defense Department is aiming to contract with as many vendors as possible to give suppliers a variety of options for accessing the data base.

Bartley said the electronic commerce program is essentially an expansion of the agency's present electronic data interchange program. Procurement officers have been asking for the ability to support requests for product in addition to standard EDI transactions.

"Officers were saying, 'EDI is great, but it only handles a small part of the business,' " Bartley said. "What we want is end-to-end automation of the entire vendor-user business relationship."

The department will begin a pilot test of the new system this summer at Wright-Patterson Air Force Base in Dayton, Ohio. Bartley said Wright-Patterson will serve as a microcosm of a fully deployed system since the base contains multiple procurement offices that purchase a substantial number of items each week.

Bartley said that other federal agencies are interested in implementing electronic commerce initiatives as well and will be closely eyeing the progress of the Wright-Patterson pilot.

A full-scale system is expected to be deployed throughout the entire department by early next year, he added.

"The idea of electronic commerce is beginning to rumble through private industry, and the federal government wants to encourage industry to follow that route," Bartley said. "It's a technology we plan to aggressively promote and pursue."

IBM stops selling PROFS; users move to OfficeVision

By Wayne Eckerson
Senior Editor

WHITE PLAINS, N.Y. — IBM this week will officially stop selling its widely used Professional Office System (PROFS) mainframe-based software, but the news drew hardly a yawn from PROFS administrators and users.

As of today, IBM will no longer sell PROFS but will work to migrate PROFS users to OfficeVision/VM, IBM's Systems Application Architecture-compliant office system software for VM-based hosts.

IBM will continue to support PROFS until it ships the second release of OfficeVision/VM, although IBM officials would not say when that will be.

Observers speculated that IBM would continue to support PROFS for at least another 12 to 18 months.

The majority of large PROFS users have already made plans to migrate to IBM's OfficeVision/VM, which most say is identical to PROFS.

"Except for a few features, there's little difference between PROFS and OfficeVision/VM, at least right now," said Rebecca Hudnall, systems programmer at Wells Fargo Bank, N.A. in San Francisco, which migrated 6,200

(continued on page 57)

Companies to merge Unix versions of LAN Manager

New offering will be based on AT&T's version.

By Caryn Gillooly
Senior Editor

BASKING RIDGE, N.J. — AT&T Computer Systems and Microsoft Corp. last week announced an agreement to consolidate their respective LAN Manager for Unix products and base the new release on AT&T's existing version of the product.

Under terms of the agreement, all OEM versions of LAN Manager for Unix will ultimately be based on the new core product.

Currently, there are two core products: one from AT&T, which the company both markets as an OEM to other vendors and sells in its AT&T StarGroup product line, and one from Hewlett-Packard Co., which Microsoft codeveloped with HP. HP has agreed to base all future products on the new consolidated version of LAN Manager for Unix.

LAN Manager for Unix 2.0 will also be interoperable with Microsoft's LAN Manager for OS/2, the original product Microsoft developed with 3Com Corp. "LAN Manager for OS/2 and LAN Manager for Unix will use the same [application program interfaces] and the same mechanisms to administer servers," said Bob Kruger, group manager for Unix networking at Microsoft in Redmond, Wash. "Servers and clients of one will be able to participate fully in a network based on the other."

Actual customer products based on the new version will not be available until those companies with licensing agreements incorporate the new core into their own products, which will take at least a year.

Companies that license LAN Manager for Unix from AT&T include Data General Corp., NCR Corp., Olivetti Systems & Networks and Unisys Corp. Companies that license LAN Manager for Unix from HP include the Open Software Foundation, The Santa Cruz Operation, Inc. and Tandem Computers, Inc.

To assist in the upgrade process, AT&T and Microsoft will release a portation kit by year end to help these companies more quickly move their product to the new platform.

According to an AT&T spokesman, the new version will have more functionality than both of the current versions. Companies licensing both versions will have to use the portation kit to upgrade their products.

According to Bill Redman, vice-president at Gartner Group, Inc., in Stamford, Conn., one of the primary drawbacks of the agreement is the need for this kit. "The code base is different in the AT&T and HP version, and although they're creating an adaptation kit, I still have questions about how easy this will be."

But this, he said, is one of the few drawbacks. The rest of the effects will be positive. "One of the great things is that to the client, nothing changes."

Redman and other analysts pointed to the future consistency between LAN Manager products from different vendors.

"This will make it less confusing to the customer about which LAN Manager implementation works with which other LAN Manager implementation," said Jamie Lewis, vice-president at Clarke Burton Corp., a consultancy in Salt Lake City. "Customers will see a more consolidated market and will be better able to piece different system together."

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NTI set to introduce new low-end Meridian 1 switch

PBX able to support between 50 and 150 lines.

By Bob Wallace
Senior Editor

ANAHEIM, Calif. — Northern Telecom, Inc. is expected to announce a new low-end digital private branch exchange at the International Communications Association's 44th Annual Conference and Exposition here in June.

The switch, the Meridian 1 System Option 11, is designed to support between 50 and 150 lines and will fill a gap between Northern Telecom's Norstar key telephone system and its larger Meridian 1 Model 21A PBX.

"It's an impressive product," said Richard Kuehn, president of RAK Associaties, a Cleveland consultancy. "Northern is targeting the system at small businesses and larger companies that want strong networking capabilities at their smaller sites."

A Northern Telecom spokeswoman would neither confirm nor deny plans to introduce the product.

> The switch will fill a gap between Northern Telecom's Norstar and Meridian 1 Model 21A.
>
> ▲▲▲

Norstar customers use the system to support an average of 29 lines, while users with the Meridian 1 Model 21A support an average of 100 lines, she said.

The System Option 11 is a single-shelf module with 10 universal card slots. A second cabinet with 10 more slots can be added. The processor takes one card slot, and each circuit card supports 16 voice/data ports.

The switch can be configured as an automatic call distributor.

The new PBX uses the same line and trunk cards and supports the same telephone sets used with Northern Telecom's Meridian 1 PBX line.

Users that outgrow the Meridian 1 System Option 11 can retain 80% of their investment when upgrading to the larger switch, Kuehn said.

Northern Telecom has told industry analysts it will take two weeks from receipt of order to deliver the new PBX.

Vince Rafferty, vice-president of The Aries Group/MPSG, a Rockville, Md., consultancy, said the wall-mountable Meridian 1 System Option 11 will be received warmly by both large and small customers that cannot justify building a dedicated room for a new switch. "It'll be a natural for those businesses."

AT&T survey shows users support carrier's freedom

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — As part of its ongoing battle to win greater regulatory freedom, AT&T last week lobbied Congress and the FCC with a survey it financed in which 14 large customers backed the idea of giving the carrier more marketing flexibility.

In the study, users said that because AT&T must file tariffs and other carriers do not, AT&T customers are missing out on savings and facing unnecessary delays in getting new services. But some of those surveyed also said they would be unlikely to move immediately to cash in on new AT&T freedoms, such as the ability to abandon tariffs and do business with the carrier through private contracts.

The study, which cost AT&T $20,000, was conducted by National Economic Research Associates, Inc. Joel Lubin, regulatory vice-president of government affairs at AT&T, said he expects the carrier to introduce the study officially as part of a Federal Communications Commission proceeding examining whether to loosen regulation for AT&T.

Authors Harry Shooshan and John Haring acknowledge that the survey is not a scientific sample but say they believe it fairly represents the views of a number of large users.

But the way in which the survey was conducted may raise questions about whether users' views were unfairly biased in favor of AT&T. While at least one user was chosen based on filings he had submitted to the FCC concerning AT&T's regulation, AT&T helped Shooshan and Haring choose most of the Tariff 12 and non-AT&T customers for the survey. AT&T account representatives made introductions, helped them arrange appointments and were present when all interviews were conducted.

But Shooshan said he does not think the presence of AT&T representatives influenced customers' responses.

"I don't think it had a chilling effect at all. In fact, one reason we felt we got blunt assessments from customers was because the account reps were there," Shooshan said. "The customers viewed it as an opportunity to get off their chests some points to be fed back to the AT&T marketing people."

The users quoted in the survey include: AMR Corp., The Boeing Co., Boise Cascade Corp., Adolph

(continued on page 57)

Show-goers look for answers

continued from page 3

At the conference, Unisys Corp. outlined some of its plans to help customers migrate to OSI and IBM's Glen Shelton, manager of communications systems architecture, detailed IBM's intentions to integrate SNA and OSI in multiprotocol environments.

"We want to be able to carry OSI data over SNA networks and vice versa," Shelton said.

IBM hopes part of its SNA/OSI Integration Architecture will accomplish that task. The vendor intends to create a common transport access layer to support upper layer SNA and OSI protocols, Shelton said.

"It's not a simple mechanical protocol conversion," he said, describing the process on the transport layer. "It will have to look up a directory and do address changes.

"The way I'd love to see it done is to use the X.500 directory," he continued. "I don't think that's the way [we're] going to do it with the first product. It will probably be something more crude." Shelton noted that no target date has been set for products.

The conference confirmed that demand for open systems is building. The second meeting of the Users Roundtable was held at the conference, where representatives from several user groups resolved to carry out certain projects.

"We have agreed to attempt to describe open systems solutions in the form of a template, a profile stack," said Bud Huber, a senior consultant at Hughes Aircraft Co. and chairman of the User Alliance for Open Systems. "We're going to create a group of proposals for a transition model. Open systems solutions have to focus on a solution for today, not tomorrow's dream."

The roundtable plans to convene again this November in London.

US Sprint forges CCS7 connection with BellSouth

By Maureen Molloy
Staff Writer

MEMPHIS, Tenn. — US Sprint Communications Corp. last week became the first interexchange carrier to establish a Common Channel Signaling System 7 (CCS7) connection with a regional Bell holding company.

The connection between the CCS7 networks of US Sprint and BellSouth Corp. at a South Central Bell Telephone Co. local exchange office here will have the immediate effect of speeding call setup time for Memphis customers, among other things.

But more importantly, analysts say, the interconnection signals the growing cooperation between local exchange and long-haul carriers to provide intelligent network services.

According to Gregory Mesniaeff, an analyst at Northern Business Information, a market research firm in New York, this type of link is central to the provision of nationwide, end-to-end intelligent network services.

The US Sprint-BellSouth interconnection "is a major first step toward the deployment of advanced signaling systems that will eventually make Intelligent Network and ISDN-based services available nationwide," he said.

Courtney Munroe, project manager of telecommunications services at Northern Business Information, said the US Sprint-Bell South announcement will put pressure on other RBHCs to become more aggressive in pursuing CSS7-related activities.

Although CCS7 has been available throughout the US Sprint network for the past three years, lack of local exchange carrier compatibility prevented the carrier from using the technology's full functionality in many public network applications, he said.

Users have lamented the slow deployment of CCS7 by the RBHCs to meet the advanced service needs of corporate customers. Collectively, the RBHCs support only about a quarter of all local access lines from CCS7-equipped central office switches.

Steven Sazegari, an analyst at Dataquest, Inc., pointed to the high cost of deploying CCS7 as the primary reason RBHCs have been slow to implement the technology. CCS7 is important to users because it is the foundation for Integrated Services Digital Networks and other intelligent network capabilities.

"The interconnection is a good sign of progress," said Robert Hutchinson, president of Softright, Inc. in Hightstown, N.J. "I've had trouble developing and selling ISDN-based applications because the connectivity is largely local and everyone is waiting for wide-area connectivity."

Integrated net users praise multivendor service plans

User needs push suppliers to team on service.

By Bob Brown
Senior Editor

Users and analysts last week applauded networking companies for pushing ahead with new multivendor service and support programs.

A growing number of vendors are teaming up to provide users with a single point of contact for service and support of their multivendor networks. For example, Hewlett-Packard Co. last week improved its Network Support Affiliate Program through an agreement with Microsoft Corp. under which HP will support Microsoft's LAN Manager, SQL Server and other software products.

Two weeks ago, Novell, Inc. announced the formation of an alliance with 11 other vendors to provide cooperative technical support to mutual customers. Analysts are citing this alliance as a model for other vendors to follow in the future.

Novell's Technical Support Alliance (TSA) includes IBM, Microsoft and other key industry players. Companies will cross-train technical staffs and exchange products and technology to provide customers with one-stop problem resolution.

"Multivendor service programs are definitely desirable given our mix of products," said Michael Prince, director of information services at Burlington Coat Factory Warehouse in Lebanon, N.H. "What vendors need to show me is that these programs work and are affordable."

Carolyn Watson, senior analyst for network support at International Data Corp., a Framingham, Mass., market research firm, predicted that more TSA-like agreements will be formed in years ahead, especially if Novell can make it work. "It's this kind of cooperation that is essential to making sure that customers' service needs are met," she said.

At least one member of the Novell group is already plotting a

(continued on page 59)

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As a noted statesman and negotiator, Bunche led the United Nations' commission that eased the Arab-Israeli conflict in 1949.

He was awarded the Nobel Peace Prize, the Presidential Medal of Freedom and more than fifty honorary degrees from colleges and universities around the world.

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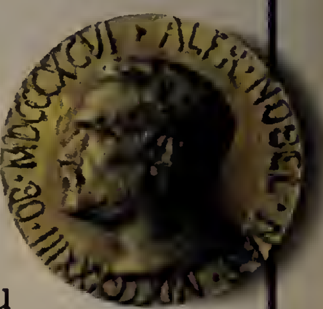

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

"I think the NCR [Corp.] computing strategy is exciting enough on its own. Now NCR has the deep pockets of AT&T to help carry out its strategy. That's a positive development."

David Evans
Vice-president and director
of information systems
J.C. Penney Company, Inc.
Dallas

People & Positions

Alan Kessler last week was named general manager of **3Com Corp.**'s Network Systems Division.

Kessler, a 3Com vice-president, will be responsible for leading the division's marketing, engineering and manufacturing operations.

Network Systems Division, formed last October, focuses on terminal servers, wiring hubs, protocol software and internetworking equipment. Eric Benhamou, 3Com's president and chief executive officer, had been managing the division since its inception.

Previously, Kessler was vice-president and general manager of 3Com's Distributed Systems Division, which includes network servers and workstations.

Gerard Caccappolo last week was named vice-president of Worldwide Carrier/Post Telephone and Telegraph Programs at **Timeplex, Inc.**

In his new position, Caccappolo will define Timeplex's strategy and tactics for increasing Timeplex's current carrier/PTT market share. Caccappolo joined in 1988 as vice-president of network strategy. Most recently, as vice-president of network architecture, he was involved in the firm's new Broadband Networking Program.

Vendors respond to move to faster EDI networking

Offering new tools for fast-batch, interactive EDI.

By Bob Brown
Senior Editor

As user demand grows for tools supporting faster methods of electronic data interchange, vendors are responding with a variety of new software and networking products.

Today, a growing number of users are migrating from traditional store-and-forward EDI to fast batch, interactive and event-driven methods of exchanging electronic documents with trading partners ("Pioneering users moving to faster methods of EDI," *NW,* May 6).

Many observers said IBM legitimized the market for faster EDI tools last month when it rolled out EDI software for MVS-based mainframes that provides for the near real-time exchange of business documents ("IBM EDI software to run in near real-time mode," *NW,* April 15).

Next month, the Ordernet Services Division of Sterling Software, a Dublin, Ohio, provider of EDI software and network services, is expected to unveil its own software for real-time EDI. The division last fall introduced its Event-Driven EDI Module for IBM MVS mainframes.

This month, Sterling Software plans to complement its software upgrades by boosting its value-added network to support both event-driven and real-time EDI, said Doris Korda, vice-president of product management at the Ordernet division.

Other leaders in the EDI software and net services market, such as GE Information Services (GEIS) and Kleinschmidt, Inc., claim to have offered such services for years. For example, both GEIS and Kleinschmidt offer network services that enable an EDI mailbox to automatically establish communications with a recipient's site to deliver a document.

"Picking up EDI messages in the purchase order business once a day isn't worth a damn," said Harry Gaples, president of Kleinschmidt, based in Deerfield, Ill. "We have customers asking us to get acknowledgments that a purchase order has been received in 15 minutes."

Guy Fisher, manager of EDI product marketing for GEIS in Rockville, Md., said his company may need to boost customer awareness of its existing EDI*Express and Priority Mailbox offerings now that users seem to be embracing faster EDI methods.

"There's a lot of market interest in event-driven EDI," he said.

Walter Ulrich, director of the Pacific Southwest offices of Arthur D. Little, Inc. in Los Angeles, said the migration of users from traditional batch mode EDI to faster methods of EDI is a natural evolution.

"Sending EDI in a batch mode overnight used to be a tremendous advantage over moving documents by mail or some other physical method," Ulrich said. "But that's not good enough for many users anymore in this era of just-in-time processes."

INDUSTRY BRIEFS

Cabletron licenses OSI software. Cabletron Systems, Inc. last week announced it has licensed Touch Communications, Inc.'s Alliance Open Systems Interconnection network management software.

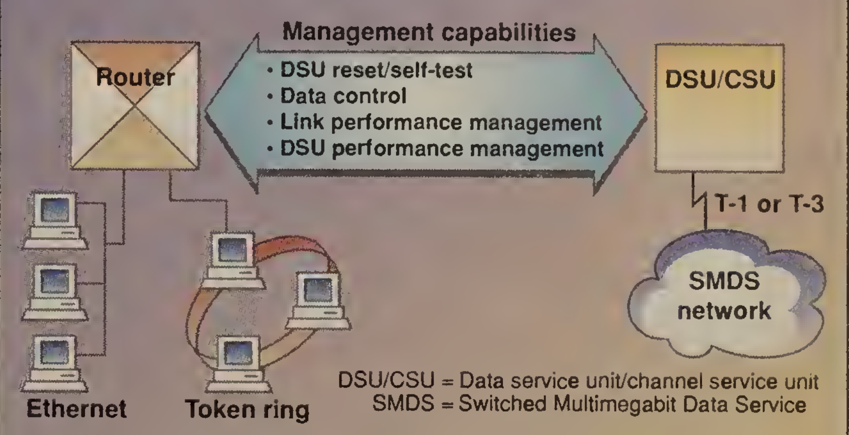
Under the agreement, Cabletron plans to incorporate Touch Communications' Alliance OSI software into its Spectrum and Remote LANview/Windows network management products. By doing so, Cabletron is taking a step toward supporting the Common Management Information Protocol, an OSI network management standard.

Alliance OSI software implements the OSI/Network Management Forum's Release 1 net management specifications.

Gandalf and OST join forces. Gandalf Technologies, Inc. last week announced the signing of an OEM agreement with OST, Inc., a Chantilly, Va., maker of X.25 packet switches.

Under the agreement, Gandalf will market OST's line of X.25 packet switches in Canada, the U.K. and the U.S. The company said it will focus on selling the gear for finance and government accounts.

Proposed SMDS interface



DSU/CSU = Data service unit/channel service unit
SMDS = Switched Multimegabit Data Service

Proposed SMDS interface links routers to SMDS network via DSU/CSUs and provides management capabilities.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: UNGERMANN-BASS, INC., SANTA CLARA, CALIF.

Vendors team up on new SMDS interface

Consortium hopes to speed development of customer premises equipment supporting SMDS.

By Bob Brown
Senior Editor

SANTA CLARA, Calif. — A consortium of internetworking and wide-area network vendors last week unveiled a standards-based interface for linking local-area networks to Switched Multimegabit Data Service (SMDS) networks.

In proposing a nonproprietary specification, the consortium is seeking to speed the development of customer premises equipment that supports emerging SMDS services. Some vendors plan to support the interface in products by year end.

SMDS is a new class of switched data service that operates at speeds ranging from T-1 to T-3. Late this year or early next year, local exchange carriers are expected to roll out SMDS services that are particularly well suited for interconnecting LANs.

Members of the new SMDS interface consortium are internetworking vendors Advanced Computer Communications (ACC), Ungermann-Bass, Inc. and Wellfleet Communications, Inc., along with WAN vendors Digital Link Corp. and Verilink Corp.

The consortium's proposal consolidates key features from interface specifications being drafted by two previously separate groups — one pairing Wellfleet and Digital Link and another consisting of ACC, Ungermann-Bass, Digital Link and Verilink.

The interface is designed to enable bridge/routers supporting LANs to connect to SMDS networks via data service unit/channel service units (DSU/CSU).

The interface partitions SMDS functions between the bridge/router and the DSU/CSUs for more effective communications.

The consortium plans to present its interface specifications to the SMDS Interest Group, a larger consortium of carriers and equipment makers seeking to promote the development of SMDS products and services. The interest group's next meeting is in June.

According to Jayshree Ullal, a senior product line manager at Ungermann-Bass, the interface has a good shot at becoming a de facto industry standard given its support by key vendors.

The interface is based on the High-Level Data Link Control protocol, which is already widely used for communications between LAN and DSU equipment, Ullal said. It also incorporates network management features.

David Yates, senior product manager for wide-area networking at Wellfleet, said more vendors are close to announcing support for the interface, though he could not provide details.

Networks Systems Corp., a Minneapolis maker of routers and other networking equipment, has said it will support the interface.

Brent Bilger, product line manager for wide-area networking at Cisco Systems, Inc., acknowledged that the interface has many attractive features, but refrained from announcing Cisco's full support for it.

Cisco, which holds the biggest share of the router market, is proposing its own SMDS specifications based on work it conducted during the past eight months. Cisco has developed SMDS interfaces in conjunction with ADC/Kentrox Industries, Inc. and NEC America, Inc. that will be available later this year.

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TELECOMMUNICATIONS

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Worth Noting

The North American Telecommunications Association recently released the fourth edition of *Industry Basics: an Introduction to the History, Structure and Technology of the Telecommunications Industry*. The book costs $40 and can be ordered by calling (800) 538-6282, Ext. 260.

Carrier Watch

Bell Communications Research recently said it is planning to host a meeting to encourage Integrated Services Digital Network customer premises equipment and application software vendors to build products conforming to its National ISDN 1 specification.

The meeting, to be held July 9 and 10 at the Omni Shoreham Hotel in Washington, D.C., is open to private branch exchange and central office switch vendors, local and interexchange carriers, and users. It marks the first time ISDN customer premises equipment and application software vendors have been invited to meet with the regional Bell holding companies that fund Bellcore.

Sessions will target technological and marketing hurdles that vendors must overcome to implement National ISDN 1, which defines a standard ISDN interface to the public network and inter-central office switch communications.

AT&T last week announced AT&T Small Business Option, an outbound long-distance calling service for companies that spend $25 to $250 a month on services.

The new service offers customers 100 minutes of monthly outgoing direct-dialed state-to-state calling for the flat rate of $20, regardless of

(continued on page 12)

GSA halts plans to migrate Navy traffic to FTS 2000

Hopes to quell Congress' concerns of impropriety.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C — Influenced by requests from Congress, the General Services Administration has put on hold its plan to migrate the U.S. Navy's long-haul traffic to US Sprint Communications Co. under the Federal Telecommunications System (FTS) 2000 contract.

Although the GSA move is designed to quell congressional concerns about possible FTS 2000 contract improprieties, by the GSA's own account, it throws the Navy's network plans into disarray and may result in hundreds of thousands of dollars in new expenses and a lawsuit from US Sprint.

The GSA decision to suspend the Navy portion of the FTS 2000 contract marked a complete turnaround from the agency's position in an April 30 letter to Rep. John Conyers (D-Mich.), head of the U.S. House Government Operations Committee.

At that time, Richard Austin, GSA administrator, turned down a request from Conyers to suspend the Navy portion of the contract until questions regarding the Navy's assignment to US Sprint are cleared up.

In his letter to Conyers, Austin wrote that US Sprint had completed site surveys, subcontractor arrangements and engineering to cut over 156 Navy locations to the new voice and data network, planned for May and September, respectively.

In a statement issued recently, US Sprint said it would be very disappointed if the Navy were reassigned, as the carrier is already in the process of converting Navy traffic onto the FTS 2000 net.

Halting the work, Austin said, would invite possible breach of contract claims by US Sprint.

"Service initiation charges alone would amount to upward of $750,000. In addition, US Sprint could file claims for additional damages," Austin stated.

However, under last week's agreement between Austin and Conyers, the GSA has suspended the Navy portion of the contract until an assistant administrator for FTS 2000 post is created and filled. That person would then determine whether the GSA decision to assign the Navy to US Sprint should be reversed.

The Navy portion of the hotly contested FTS 2000 contract, originally assigned to AT&T, was

(continued on page 12)

WASHINGTON UPDATE

BY ANITA TAFF

AT&T reacts to leveraging claims. AT&T last week defended a proposed service, CustomNet Plus, in which it would offer small business users combined discounts on their inbound and outbound traffic.

Last June, the Federal Communications Commission rejected as unlawful a similar AT&T proposal to offer combined discounts on 800 and Software-Defined Network (SDN) service. Rival carriers claim the CustomNet Plus service has the same legal flaw: It allows AT&T to leverage its dominant position in the 800 market to sell another service. Additionally, MCI Communications Corp. complained that AT&T was trying to undermine its MCI Preferred, a similar service, by announcing several months in advance that it would offer a competing service.

Last week, AT&T dimissed both claims as meritless. "Merely branding AT&T's [CustomNet Plus] as an effort at leveraging, as MCI and US Sprint [Communications Co.] have done, does not support any claim of anticompetitive pricing," AT&T stated last week in a filing with the FCC.

AT&T said its offering could be considered as leveraging only if it refuses to sell one service unless a second service is purchased. AT&T pointed out that it sells SDN and 800 services separately under tariffs.

AT&T also rebutted the idea that it is leveraging its position in the 800 service market to sell the SDN service. Despite the

(continued on page 12)

Proposed Bell Atlantic ISDN service rates

Tariff	Cost
Centrex BRI	$25 per month (voice)
Non-Centrex BRI	Still unformulated
PRI	$900 per month (voice and data) 2 to 5 cents per minute usage charge (data)
Residential BRI	$12 per month over standard maintenance fee (voice) $5 per month over standard maintenance fee (packet-switched data) $8 per month over standard maintenance fee (circuit-switched service)

BRI = Basic Rate Interface
PRI = Primary Rate Interface

SOURCE: BELL ATLANTIC CORP., WASHINGTON, D.C.
GRAPHIC BY SUSAN J. CHAMPENY

Bell Atlantic unveils ISDN rollout plans

The carrier's new enthusiasm for the service is based in part on the National ISDN 1 standard.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — Bell Atlantic Corp. recently mapped out its plans to roll out Integrated Services Digital Network offerings later this year and disclosed its pricing strategy for those services as well.

The carrier, conceding it has kept ISDN on the back burner, said its renewed enthusiasm for the technology is due to efforts by equipment manufacturers to implement common ISDN standards, thus eliminating equipment interoperability problems.

Frank Schaffer, data products marketing manager at Bell Atlantic, said the company later this year will file its first ISDN tariffs with state public utility commissions. The rollout schedule calls for the filing of a Centrex Basic Rate Interface (BRI) tariff in third-quarter 1991, followed by the filing of a tariff for non-Centrex BRI service in the first quarter of next year.

Its tariff for Primary Rate Interface service will be filed in first-quarter 1992, followed by a tariff for residential BRI service in second-quarter 1992 (see graphic, this page).

The ISDN services will be backed up by a Common Channel Signaling System 7 (CCS7) network, an out-of-band signaling network that Bell Atlantic is installing to support ISDN. "We'll have 90% deployment of [Signaling System 7] in the 1993-to-1994 time frame," Shaffer said.

The carrier has 293 switches equipped to support ISDN and will have a total of 700 ready by 1994. The company now has 6.9 million lines capable of supporting BRI, with plans to have 17.1 million, or 90% of its lines, supporting the interface by 1994. The company has already sold 23,000 ISDN lines in customer-specific arrangements.

Bell Atlantic's new plans are based in part on an industrywide commitment announced in March to adhere to National ISDN 1, Bell Communications Research technical references intended to alleviate equipment compatibility problems.

At that time, several switch manufacturers and three of the regional Bell holding companies announced they would support the references starting in 1992.

> The company has already sold 23,000 ISDN lines in customer-specific arrangements.
>
> ▲▲▲

This collective effort was organized under the auspices of the Corporation for Open Systems International (COS).

Schaffer said the ISDN customer premises equipment interoperability problems made his firm reluctant to deploy ISDN until the issues were resolved. "The big thing about the COS announcement is [that] it sets the stage," he said, adding that in the future, users' customer premises equipment should be compatible with ISDN, regardless of which manufacturers' switches are installed in an RBHC central office.

"Now that we have [the common ISDN line-coding standard] 2B1Q, we're changing our sales strategy to actively market ISDN," Schaffer said.

Carrier Watch

continued from page 11

distance or time of day when the calls are placed. Calls over the 100-minute allotment are billed at 20 cents a minute.

AT&T Small Business Option includes flat rates on all outgoing interstate direct-dialed domestic calls and all direct-dialed interstate calls charged to the AT&T Corporate Card. There is no limit on the number of calls customers can place each month.

The carrier issues a 10% monthly credit on all direct-dialed intrastate calls and a 10% discount on all direct-dialed domestic interstate calls charged to the AT&T Corporate Card.

AT&T Small Business Option will be available June 24, pending Federal Communications Commission approval.

US Sprint Communications Co. recently announced that it has renewed and expanded a five-year, $15 million contract to provide Florists Transworld Delivery Association (FTD) with a wide variety of network services.

Under the deal, FTD will continue using US Sprint's Ultra WATS, 800 and Clearline 1.5 T-1 services. The renewed agreement also calls for the agency to begin using US Sprint's year-old Integrated Services Digital Network offering. US Sprint said it handles the majority of voice and data services for FTD. ◘

Washington Update

continued from page 11

fact that the carrier has an 80% share of all 800 services and users cannot utilize their existing 800 number if they switch to a rival carrier, AT&T claims it does not have a dominant position in the 800 market.

In another filing with the FCC last week, AT&T also defended a Tariff 12 deal for Colonial Penn Group, Inc., which MCI claims illegally bundles 800 and SDN discounts. MCI filed a complaint against that deal in December.

In response to specific questions raised in MCI's complaint, AT&T acknowledged that a large proportion of the Colonial Penn deal is for 800 service. The carrier said 800 service composes 72% of the total minutes billed and 55.8% of the revenue in the deal.

AT&T asks FCC to dismiss WilTel protest. AT&T told the Federal Communications Commission last week that it should throw out a protest filed by WilTel against a major revision AT&T wants to make to its Tariff 12 deal for Bridgestone/Firestone, Inc.

Last month, AT&T told the FCC it wanted to cut the minimum annual charge for that deal by more than 60%, from $6.45 million to $2.5 million.

AT&T said Bridgestone/Firestone was having severe business difficulties and could not meet its minimum annual charges.

WilTel filed a complaint against the revision, saying AT&T shouldn't be allowed to suddenly change a major provision of the deal that was supposed to be permanent. According to AT&T's tariffs, users are responsible for paying the minimum annual charges even if their actual traffic usage costs do not reach that total.

AT&T said that although it greatly lowered the minimum annual charge, the customer made substantial concessions and redesigned its network.

The carrier explained that its rates for the deal increased an average of 6.3% and the user was also required to pay a onetime charge of $350,000 to cover the costs of revising the deal. Additionally, AT&T reduced volume discounts available to Bridgestone/Firestone under the Tariff 12 deal. ◘

GSA halts Navy traffic migration

continued from page 11

reassigned last October by the GSA to US Sprint, despite protests from AT&T.

Recently, the General Accounting Office and Congress have attacked the award of the Navy contract to US Sprint on several counts.

The GSA's flawed analysis of all government net traffic in 1988 has resulted in service imbalances, with AT&T, the lower bidder, netting only 40% of revenues, while US Sprint, the higher bidder, has gained about 60% of the network traffic.

FTS 2000 calls for AT&T to receive 60% and US Sprint to hold 40%.

Congress and the GSA maintain that the Navy reassignment, with traffic valued from $20 million to over $100 million, only aggravates the existing imbalance.

Conyers last week commended Austin for his decision to suspend US Sprint's Navy portion of the contract.

"We now have the opportunity for the largest civilian contract ever to become a model for success, rather than the chaos it has been until now," Conyers said.

Sources at the GSA and Congress said the GSA's reversal on the Navy deal came as a result of fear of appropriations cutoffs, and congressional threats to demand all documents relating to FTS 2000 and to subpoena GSA employees and Budget Director Richard Darman.

AT&T welcomed the move to suspend Navy traffic.

"In particular, the recommitment to achieving the original 60%-to-40% contract split — cumulatively over the program's first four years — restores integrity to this competitively awarded contract," AT&T said in a statement. ◘

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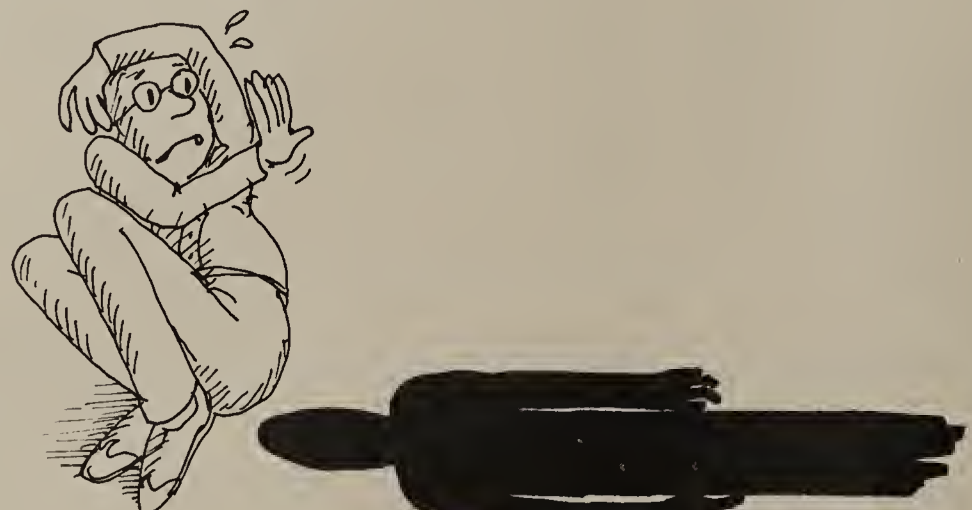

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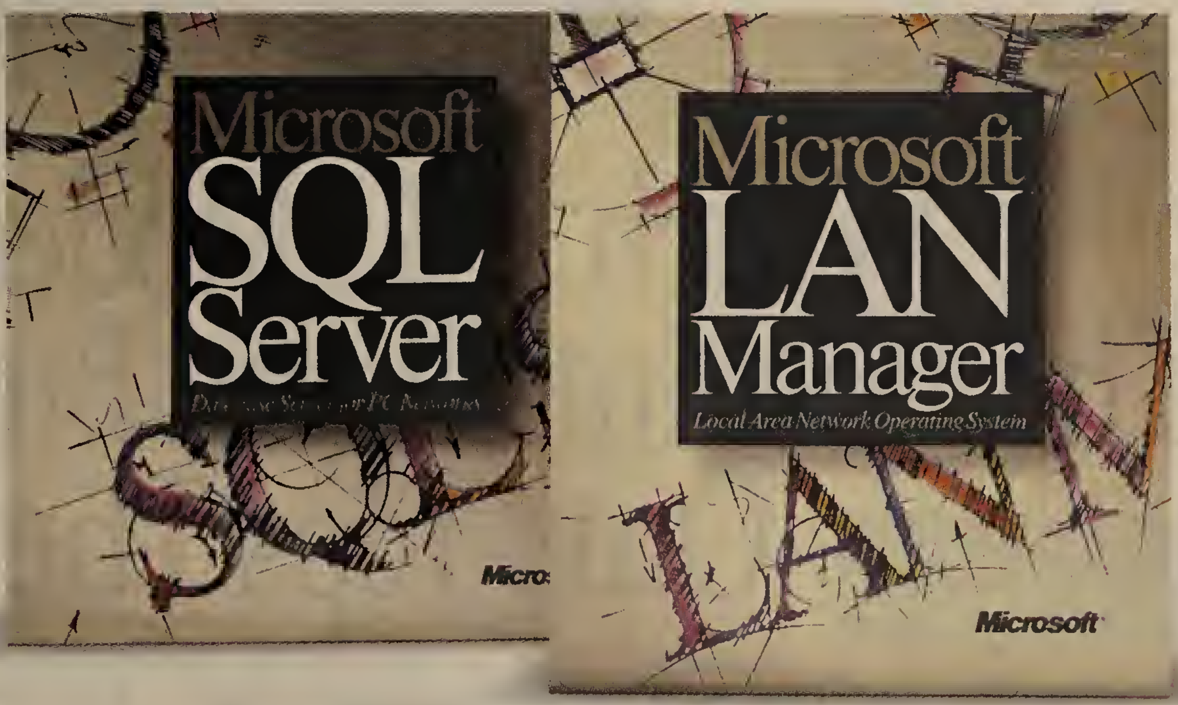

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Which V.32 Modem Is The Most Intelligent Buy? Ours Tops The Chart.

..."Digicom's 9624LE+ offers above average performance, good compatibility...plenty of optional features and even fax support.". PC WEEK

PC WEEK High-speed Modem Product Review / November 19, 1990

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1. Price / Performance	●	◒	◒	◒	◒	◒
2. Support of Older Modems	●	●	●	●	●	●
3. V.32 / V.42bis Compatibility	●	●	◒	○	○	●
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Bob Collins
President and
chief executive officer
GE Fanuc Automation N.A., Inc.
During the keynote speech at
a recent North American
MAP/TOP Users Group conference.
Nashville

Data Packets

Digital Access Corp. of Reston, Va., last week introduced two new models of its Fracdial data service unit/channel service unit, which combines multiple switched digital links into a single pool of bandwidth for high-speed data or video applications.

The new Fracdial 14x1 enables users to establish as many as 14 56K or 64K bit/sec switched digital links for a total usable bandwidth of 768K bit/sec. The new Fracdial 24x1 supports up to 24 such links or a full T-1 circuit.

Digital Access also announced reduced pricing for Fracdial products. The original model, which supported only eight dial-up links, was priced at $9,500. Fracdial 14x1 is priced at $6,995, and Fracdial 24x1 costs $11,500. Both will be available July 1.

The National Center for Manufacturing Science, a consortium of corporations promoting advancements in manufacturing, recently said members **Allen-Bradley Co., Concord Communications, Inc.** and **General Motors Corp.** will team up to develop a new broadband modem for Manufacturing Automation Protocol nets.

Under the alliance, $1 million will be spent to develop the new modem, which will be based on digital technology. The device will also reduce the size and power consumption of existing modems used to build campuswide 802.4 token bus networks.

MAP/TOP member pushes merits of existing profiles

Calls on users to stop development of new stacks.

By Paul Desmond
Senior Editor

NASHVILLE — An effort to meld existing OSI profiles became a topic of discussion at the recent North American MAP/TOP Users Group meeting here when a prominent member issued a plea for users to refrain from issuing new profiles.

In April, representatives of four groups that have Open Systems Interconnection profiles met in San Francisco to discuss how they could merge their profiles into one common document in hopes of presenting a united front to vendors, thereby speeding development of OSI products (Page 2 Briefs, *NW*, April 22).

Attendees at the April meeting represented the Manufacturing Automation Protocol, Technical and Office Protocol, National Institute of Standards and Technology (NIST), which is responsible for the Government OSI Profile (GOSIP), and Electric Power Research Institute.

During a session at the MAP/TOP meeting, Laurie Bride, manager of network architecture at Boeing Computer Services Co. in Seattle, issued an impromptu plea for users not to develop any more OSI profiles without first consulting with the as yet unnamed common profile group. Bride is a past chairwoman of the MAP/TOP Users Group.

"This is not a closed activity," she said. "If there is an industry that is considering establishing a profile group, we'd very much like to encourage them to become part of this activity."

Awaiting approval

Jerry Mulvenna, manager of the network applications group at NIST, said each of the four groups working on the common profile has to get the go-ahead from its members to participate in the project. That action is expected to happen by early next month.

By this fall, the group hopes to outline a common specification, while a draft proposal is expected to be issued in about a year. The timing is designed to coincide with the third release of GOSIP.

The common profile will not entirely replace the four indus-

(continued on page 18)

Newbridge, Timeplex sign carriers to T-1 mux deals

By Paul Desmond
Senior Editor

HERNDON, Va. — Newbridge Networks, Inc. and Timeplex, Inc. last week announced agreements with carriers that will use the companies' T-1 multiplexing equipment for internal and public data applications.

Newbridge announced a three-year agreement with Pacific Bell under which the carrier will buy Newbridge multiplexing and net management products both for internal use and to upgrade its public network.

Timeplex announced that INS Telecommunications, Inc. (INSINC), a Canadian reseller, has purchased more than $500,000 worth of Timeplex Link/2+ multiplexers and the TimeView/2000 network management system, both of which will be used to provide data services.

Pacific Bell's first purchase under the contract will be for equipment to upgrade its internal T-1 data network, said Rick West, staff manager for data communications planning at Pacific Bell. The network supports data communications among 23 sites, including data centers and network entry points where traffic is collected from surrounding offices.

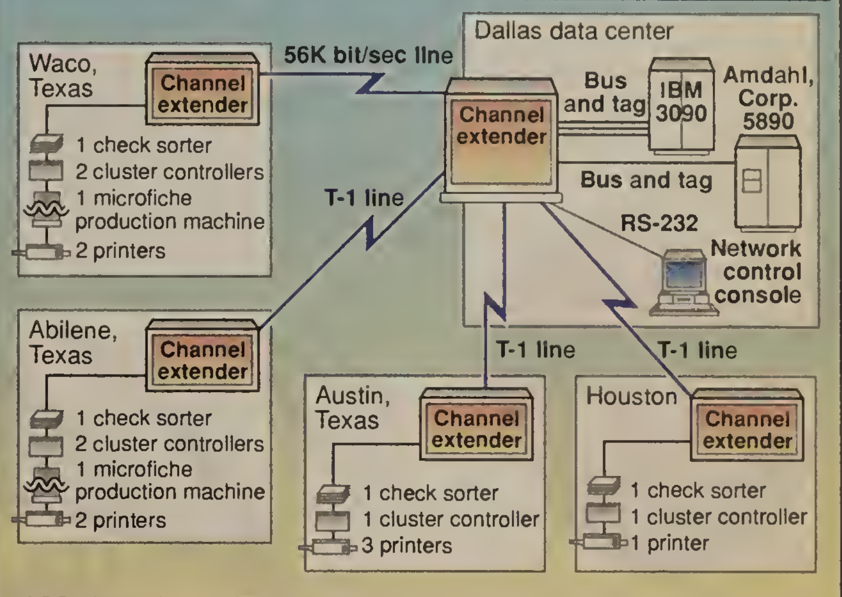
Pacific Bell will replace the existing T-1 equipment at those sites with Newbridge 3645 and 3600 MainStreet Bandwidth Manager multiplexers. West said those multiplexers have greater capacity than the existing equipment purchased from a vendor he declined to name. The Newbridge multiplexers will also support an upgrade to T-3, which West said was a possibility.

The contract has no fixed dollar amount, said Gary Davison, vice-president of public networking systems at Newbridge. Similar contracts, such as one Newbridge signed with Bell Atlantic Corp. two years ago, have been worth between $15 million and $20 million per year, Davison said.

INSINC's most recent purchase of Timeplex equipment brings its total equipment purchases from the vendor to more

(continued on page 19)

Extended channel net distributes processing



ACS' channel extender network links remote devices to a channel extender switch at the data center, which routes traffic to the appropriate host channel.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: AFFILIATED COMPUTER SYSTEMS, INC., DALLAS

Channel extenders let firm optimize net

Back-end network enables ACS to support host peripherals at remote sites, consolidate CPUs.

By Jim Brown
Senior Editor

DALLAS — Affiliated Computer Systems, Inc.'s (ACS) installation of channel extenders with network switching capabilities has enabled the firm to eliminate several mainframes in the regional data centers of companies it has acquired.

The data processing service bureau uses Computer Network Technology Corp. Channelink extenders to link remote peripherals to block multiplexer channels on an IBM 3090 and Amdahl Corp. 5890 here. This enabled ACS to eliminate smaller IBM 43XX hosts in four regional centers.

Besides reducing hardware, the channel network obviated the need for systems operators at each remote site and saved the cost of license fees for duplicate software.

"The network allows us to keep remote sites as strictly production and service centers," said James Gibbons, vice-president of ACS Financial Services, Inc., the parent company of ACS.

Formed as a data processing firm in 1988, ACS got into the business by acquiring data processing companies in Oklahoma, with regional centers in Oklahoma City and Tulsa. It also acquired data processing sites in Abilene, Houston and Waco, Texas. The pace of the acquisitions left ACS with duplicate processors, software and support staffs by late 1989.

"When we bought [these data centers], we realized the need for channel extension," said Ron Sheppard, vice-president of data communications for ACS. "It is more economical to do channel extension than to keep all that [duplicate equipment and software] out there."

ACS has since sold off its Oklahoma data centers to another data processing firm and retained that company to process jobs for its Oklahoma customers.

The network also reduces the amount of hardware and software ACS needs to open new regional centers. The company last year opened its first new regional center in Austin, Texas.

"This network gives us the opportunity to do two things," Gibbons said. "It gives us the ability to go into a new territory and open a new distributed site. And it gives us the opportunity to acquire a business and reduce the local operating environment."

Every remote site is equipped with printers, check sorters, microfiche production machines and cluster controllers. Each night, banks transport checks and other paper-based transactions, such as loan payment slips, to a regional center. The checks are fed through the sorter, while clerks use terminals attached to the cluster controller to enter other data. The data is then fed over the channel network to the host for processing.

The host downloads files to printers that produce customer statements and management reports. The host also downloads files to the microfiche machine,

(continued on page 18)

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privately-owned transatlantic fiber optic cable completed. 1990 *Sprint announces first commercial video services to the Soviet Union. Sprint introduces first nationwide ISDN capabilities.*

Channel extenders optimize net

continued from page 15

which produces logs of daily banking transactions and account balances for long-term storage. The reports and microfiche are then transported to the banks.

Because ACS and the banks must deliver paper back and forth, regional centers must be located within a short drive of the banks, something that made it impractical to close the regional centers and move all processing to Dallas.

Instead, the company decided to daisy-chain the peripherals in the regional centers to a Channelink.

A single Channelink in Dallas communicates with the Channelinks in Abilene, Austin and Houston via fiber-optic T-1 circuits provided by WilTel. The Dallas Channelink communicates with the Channelink in Waco via a 56K bit/sec WilTel circuit.

The Dallas Channelink has bus and tag links to two channels on the IBM host and one on the Amdahl host (see graphic, page 15).

The Dallas Channelink runs address translation software that enables it to route traffic to the correct host channel. While the printer, microfiche machine and cluster controller at one location share a single link to the host site, for example, the Dallas Channelink can ensure that the printer communicates with the first IBM host channel, while the microfiche machine communicates with the other IBM host channel and the cluster controller communicates with the Amdahl.

Channel extenders that do not support network switching force users to attach all peripherals at one site to the same mainframe channel, thus reducing a user's ability to spread processing loads across multiple channels.

The Channelink also enables ACS to easily switch traffic destined for a failed remote site to one that is functioning. Although that new site could be a greater distance away from banks, it at least gives ACS the ability to shift work between sites, Gibbons said.

Otherwise, ACS would be forced to process the work at its Dallas site, which may actually be further from the bank than an alternative remote site. "The [Channelink] box is very intelligent," Sheppard said. "It does a lot of networking."

Channelink also includes a buffering technique that makes it appear to peripherals as a mainframe channel. This technique overcomes distance limitations that other channel extenders experience.

The host operating system and peripherals expect each other to acknowledge transmissions within a specific amount of time. If responses do not come back within the prescribed period, communication is delayed or even terminated, a process known as timing out.

ACS encountered just such a distance problem with a channel extender it refused to name specifically. That extender worked well when communicating with peripherals at a remote Dallas location, but when it started to communicate with peripherals in other cities, it took too long for acknowledgments to traverse the longer circuit, resulting in too many time outs, Sheppard said.

Channelink transmits acknowledgments as soon as data is received, and it uses a Computer Network Technology error checking protocol to determine if the data was actually received at the remote site. If problems occur, Channelink requests specific blocks of data to be resent.

Member pushes profiles' merits

continued from page 15

try-specific profiles. Instead, it will include a base document with a series of addendums or appendixes that address specific industry concerns, Mulvenna said. GOSIP, for example, will still be mandated for federal government procurements.

The common profile should address about 95% of what each of the four separate documents now includes, he said.

The purpose is "to present a united front to vendors, showing that not just the government, but a large segment of industry with a significant amount of purchasing power, is ready to purchase OSI products," Mulvenna said.

That, in turn, should help spur development of OSI products.

Only standards that have full international standard status will be eligible to be part of the common profile, Bride said. That means standards such as mini-MAP, which is a shortened stack version of MAP, would have to be included in the industry-specific extensions.

Bud Huber, chairman of the User Alliance for Open Systems, said his group supports the plan to merge existing profiles.

Huber said the group could come up with a profile that is common at Layers 2 through 6 of the OSI model, leaving Layers 1 and 7 open for different groups to add their own requirements. Layer 1, the physical layer, would be left out because users employ different kinds of media, he said, while Layer 7, the application layer, would be left for the requirements of individual industries.

He acknowledged that there is much more work to do before the group can meld the differences between existing profiles at Layers 2 through 6. This is because many profiles present different options at those layers, such as the connection-mode vs. connectionless network services at Layer 4.

But Huber defended the group's efforts in trying.

"You'll never get the answer if you don't ask the question," he said.

Bride said anyone interested in volunteering to help in the effort to devise a common OSI profile should contact the Corporation for Open Systems International (COS) in McLean, Va. COS can be reached by calling (703) 883-2700.

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Tekelec protocol analyzer gets frame relay support

Offering can monitor and simulate packet nets.

By Jim Brown
Senior Editor

CALABASAS, Calif. — Tekelec, Inc., based here, recently announced software that will enable its Chameleon 32, Chameleon 20 and Tekelec 705 protocol analyzers to simulate and monitor frame relay networks.

The software, which will enable users to test frame relay implementations and evaluate network performance, includes five functional modules that will ship in phases throughout the year. The first phase includes three modules that are scheduled to ship later this month.

One of the early products is the Frame Relay Analysis module, which enables users to decode frame relay packets and examine them for compliance with several standards.

The analysis module will examine packets for compliance with the Local Management Interface (LMI) specification that Cisco Systems, Inc., Digital Equipment Corp., Northern Telecom, Inc. and StrataCom, Inc. jointly developed to manage frame relay networks, as well as ANSI T1.6fr, including appendix B and D, ANSI T1.6ca and CCITT Q.922.

> The analysis module will examine packets for compliance with the LMI specification.
>
> ▲▲▲

One of the other two modules shipping this month is the Frame Relay Builder, which allows users to build frames with errors in an attempt to duplicate a problem detected during analysis. The last module is the Protocol Monitoring Development System Frame Relay Building Blocks, which enables users to edit the files used to decode frame relay packets in order to support customized frame relay implementations and to reflect changes in frame relay standards.

Later this year, the company will serve up the Frame Relay Simulation module, which allows the protocol analyzer to create the simulated frame relay traffic needed to test switches, routers and other end nodes. Tekelec will also introduce the Frame Relay Network Evaluation System, which displays network statistics in tabular and graphical format on the protocol analyzer's screen.

Pricing for the software has not been determined.

The announcement comes a month after Hewlett-Packard Co.'s Idacom division, based in Edmonton, Alberta, added frame relay monitoring and simulation software to its PT300, PT500 and MPT protocol analyzers.

The monitoring module decodes ANSI's emerging T1S1/90-214 T1.6a and T1S1/90-213 T1.6fr. It also decodes the frame relay implementation developed by Cisco, DEC, Northern Telecom and StrataCom, including the LMI. The module will be upgraded to support additions and enhancements to these standards.

Decoded frame relay protocol data can be displayed on the screen, stored in memory for later display or stored to disk. The module also enables users to capture frame relay packets containing specific addresses.

The simulator module enables users to write test files containing frame relay traffic with or without errors and to examine how the communications equipment processes those frames.

Later this year, Idacom will release an addition to the module that will automatically insert an error-free Layer 2 frame relay protocol into a script, a function that reduces the time it takes users to build scripts.

Available now, the monitoring module costs $1,500 while the simulation module is priced at $2,060. Idacom will release a module later this year that will enable users to statistically measure frame relay network performance. ◪

Firms sign T-1 mux deals

continued from page 15

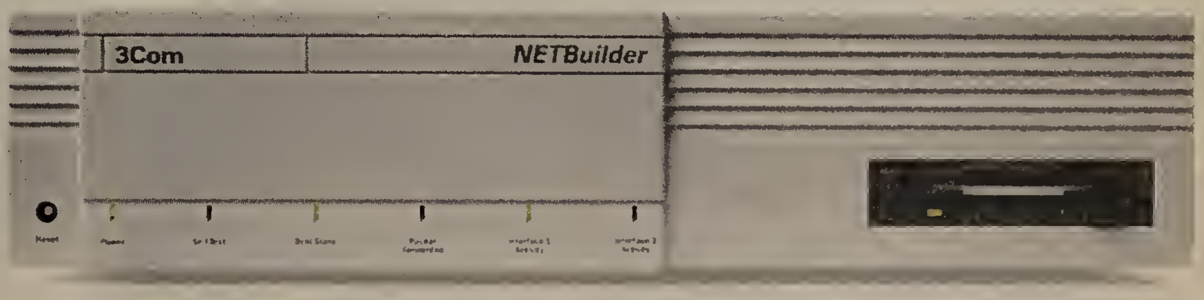
than $2 million, said Steve Baker, president and chief executive officer of INSINC. The carrier has T-1 nodes in seven Canadian cities: Calgary and Edmonton, Alberta; Montreal; Ottawa; Toronto; Vancouver; and Winnipeg, Manitoba. It also has two U.S. T-1 nodes — one near Seattle and the other near Buffalo, N.Y.

INSINC buys full T-1s from the two tariffed Canadian carriers and uses the Timeplex equipment to carve them into individual 56K bit/sec or lower speed digital data service lines, which are resold to users at a 20% to 30% discount off tariffed rates, Baker said. The company also offers fractional T-1 lines, he added.

INSINC's two U.S. nodes are located at MCI Communications Corp. points of presence. The two companies are working on an agreement that will enable users to be billed by only one of the two carriers for an international circuit, Baker said.

INSINC will purchase another $2 million worth of Timeplex equipment this year to expand existing nodes and possibly add new ones, he added. ◪

Ch Changes.



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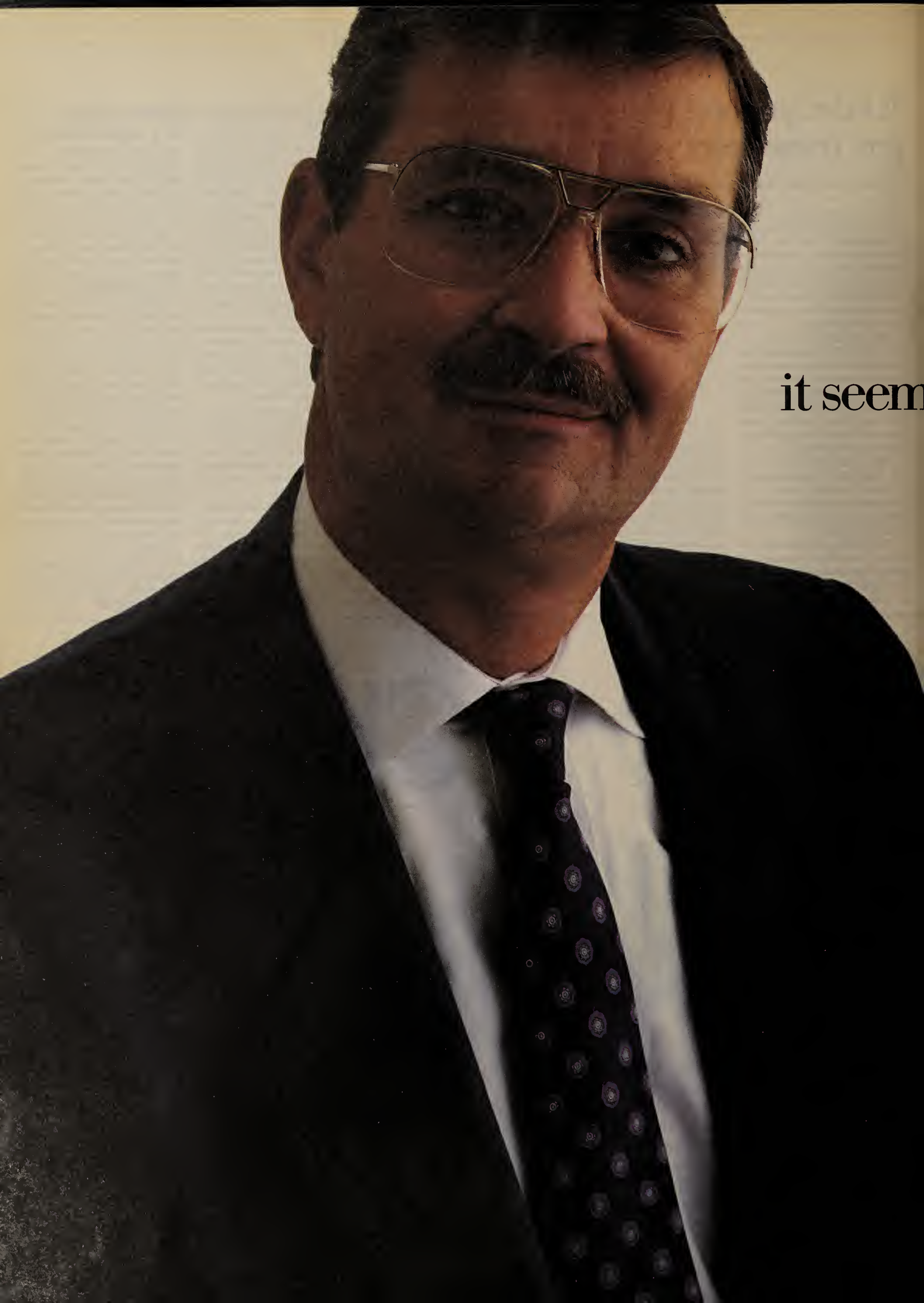

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The present.

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“This place was a paper mill, but no more. And our ability to communicate with each other—remember, we manage the case flow of 65 judges—is vastly improved. Since OfficeVision arrived, we've continually increased our application portfolio and usage goes up 20% every year. That's because people are getting information faster and more easily.”

The future.

Frank also has some thoughts on investment protection.

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“And as an SAA application, OfficeVision gives me comfort for the future. There have been skeptics, I know, but SAA is real. It lets me look down the road and see around the corners, to know what'll be there.

“As I said, this is government. If you make mistakes, you live with them. For us, OfficeVision was no mistake.”

To learn more about the 17th Circuit Court's OfficeVision installation, call IBM at 1 800 IBM-6676, extension 857.

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First Name Middle Name Last Name

TITLE ....

COMPANY NAME ....

DIVISION/DEPARTMENT ....

STREET ADDRESS ....

CITY .... STATE .... ZIP ....

C. Please Answer ALL Questions, Sign & Date the Form.

1 Industry: (check one only)

01. ☐ Manufacturers (other than computer/communications)
02. ☐ Finance/Banking
03. ☐ Insurance
04. ☐ Real Estate
05. ☐ Healthcare Services
06. ☐ Legal
07. ☐ Hospitality
08. ☐ Retail/Wholesale Trade
09. ☐ Transportation
10. ☐ Utilities
11. ☐ Education
12. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
13. ☐ Government State/Local
14. ☐ Government Federal
15. ☐ Military
16. ☐ Aerospace
17. ☐ Consultants (independent)
18. ☐ Carriers
19. ☐ Interconnects
20. ☐ Manufacturers (Computer/Communications)
21. ☐ VAR/VAD/Systems House
22. ☐ Distributor, Computer Related
23. ☐ Distributor, Communications Related
24. ☐ Other ____________

2 Job function: (check one only)

1. ☐ Networking Management (Responsible for both voice & data)
2. ☐ MIS Management (VP, Dir., Department Head)
3. ☐ Corporate Management (Chairman, President, Owner, General Manager, CEO, CIO, VP)
4. ☐ Data Communications Management (Responsible for data only)
5. ☐ Telecommunications Management (Responsible for voice only)
6. ☐ Financial Management
7. ☐ Engineering Management
8. ☐ Consultant (Independent)
9. ☐ Other ____________

3 What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check one only)

1. ☐ Enterprise Wide (Organization/Subsidiary/Division)
2. ☐ Multi Enterprise (Consultants)
3. ☐ Department Wide

4 What is the total number of sites for which you have purchase influence?

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1

5 Your primary responsibility: (check one only)

1. ☐ Both Deta + Voice
2. ☐ Data Networking Only
3. ☐ Voice Networking Only
4. ☐ None

6 Which transmission media do you use in your network: (check all that apply)

Public:
01. ☐ Switched-Based (DDD, Wats, Megacom, etc.)
02. ☐ Leased Line (not including T-1)
03. ☐ T-1
04. ☐ Fractional T-1
05. ☐ T-3/SONET
06. ☐ Broadband
07. ☐ ISDN

Private:
08. ☐ Satellite
09. ☐ Microwave
10. ☐ Fiber Optic

7 Is your network: (check all that apply)

LOCAL AREA NETWORK
1. ☐ Local (within building)
2. ☐ Local (in a campus environment)

WIDE AREA NETWORKS
3. ☐ International
4. ☐ National
5. ☐ Regional (several states)
6. ☐ Metropolitan

8 What is your network architecture? (check all that apply)

1. ☐ SNA
2. ☐ DECNET
3. ☐ OSI
4. ☐ GOSIP
5. ☐ MAP/TOP
6. ☐ TCP/IP
7. ☐ DCA (UNISYS)
8. ☐ OTHER ____________

9 What is your LAN Operating System? (check all that apply)

01. ☐ 3COM (3+, 3+open)
02. ☐ LOCAL TALK (APPLETALK)
03. ☐ BANYAN (VINES)
04. ☐ DCA (IRMALAN)
05. ☐ IBM (LAN Server)
06. ☐ IBM (PC LAN PROGRAM)
07. ☐ MICROSOFT (LAN MANAGER)
08. ☐ UNGERMAN BASS (NET/1)
09. ☐ NOVELL (NETWARE)
10. ☐ TOPS
11. ☐ PROTEON (PRONET)
12. ☐ OTHER ____________

10 What is your LAN environment? (check all that apply)

1. ☐ 4M TOKEN RING
2. ☐ 16M TOKEN RING
3. ☐ ARCNET
4. ☐ ETHERNET
5. ☐ STARLAN
6. ☐ FDDI
7. ☐ LOCALTALK
8. ☐ 10BASET
9. ☐ OTHER ________

11 Which operating systems do you utilize? (check all that apply)

1. ☐ IBM DOS (VSE)
2. ☐ UNIX
3. ☐ OS/2
4. ☐ OS/2 Extended Edition
5. ☐ MVS
6. ☐ VM
7. ☐ VMS
8. ☐ XENIX
9. ☐ PICK
0. ☐ OTHER ______

12 Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAINFRAMES A	MINIS B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. BULL HN IS		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

13 Please indicate by vendor the number of microcomputers/workstations:

A. Presently installed in your network.

B. The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER/ WORKSTATION/ VENDOR	PRESENTLY INSTALLED A	PLAN TO INSTALL NEXT 12 MONTHS B
01. PCs based on 80286 chip		
02. PCs based on 80386 chip		
03. PCs based on 80486 chip		
04. 8086/8088		
05. Macintosh		
06. RISC-based workstetions		
07. UNIX-based workstations		

14 What is your planned PC standard? (check all that apply)

1. ☐ EISA
2. ☐ MCA
3. ☐ NUBUS (MACINTOSH)

15 For which areas outside of the U.S. do you have purchasing influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East

16 Check ALL that apply in columns A and B

A) I am presently involved in the purchase process for the following products/services:

B) I plan to purchase the following products/services in the next 12 months:

Presently Involved A	Plan to Purchase B	
A	B	LOCAL AREA NETWORKS:
01. ☐	☐	Local Area Networks
02. ☐	☐	LAN Servers
03. ☐	☐	LAN Services
04. ☐	☐	Cables, Connectors, Baluns
05. ☐	☐	Bridges, Routers, Gateweys
06. ☐	☐	UPS
07. ☐	☐	LAN Storage Devices
A	B	COMPUTERS/PERIPHERALS:
08. ☐	☐	Micros
09. ☐	☐	Minis
10. ☐	☐	Mainframes
11. ☐	☐	Front End Processors
12. ☐	☐	Terminals
13. ☐	☐	Laptops
14. ☐	☐	Printers
15. ☐	☐	Work Stations
16. ☐	☐	Cluster Controllers

(continued on next column)

Presently Involved A	Plan to Purchase B	
A	B	SOFTWARE:
17. ☐	☐	Network Management
18. ☐	☐	Micro to Mainframe
19. ☐	☐	Network Security
20. ☐	☐	Call Accounting
21. ☐	☐	Distributed DBMS
22. ☐	☐	Communications Software
23. ☐	☐	Applications Software
24. ☐	☐	Network Operating Systems Software
25. ☐	☐	EDI Software
26. ☐	☐	E-Mail Software
A	B	DATA COMMUNICATIONS:
27. ☐	☐	Modems (over 9.6kbps)
28. ☐	☐	Modems (under 9.6kbps)
29. ☐	☐	T-1 Multiplexers
30. ☐	☐	T-3 Multiplexers
31. ☐	☐	Fractional T-1 Multiplexers
32. ☐	☐	Data Switches
33. ☐	☐	Matrix Switches
34. ☐	☐	Packet Switches
35. ☐	☐	Protocol Converters
36. ☐	☐	Network Management Systems
37. ☐	☐	Terminal Emulation Boards
38. ☐	☐	Facsimile Machines
39. ☐	☐	Diagnostic Test Equipment
40. ☐	☐	DSU/CSU
41. ☐	☐	Data Security
42. ☐	☐	Data Compression Equipment
43. ☐	☐	Network Adapter Boards
44. ☐	☐	Microwave
45. ☐	☐	Messaging Software
A	B	TELECOMMUNICATIONS:
46. ☐	☐	PBXs (over 1000 lines)
47. ☐	☐	PBXs (200 - 1000 lines)
48. ☐	☐	PBXs (under 200 lines)
49. ☐	☐	Key Systems
50. ☐	☐	Autometic Call Distributors
51. ☐	☐	Voice Messaging Systems
52. ☐	☐	Video Teleconferencing Systems
A	B	SERVICES:
53. ☐	☐	Switched Voice
54. ☐	☐	Dedicated Leased Line
55. ☐	☐	T-1
56. ☐	☐	T-3
57. ☐	☐	Digital Data
58. ☐	☐	Packet Switched
59. ☐	☐	Centrex
60. ☐	☐	Central Office Lan
61. ☐	☐	Satellite
62. ☐	☐	On-Line Information
63. ☐	☐	ISDN
64. ☐	☐	EMail
65. ☐	☐	VSAT

17 Estimated value of networking equipment and services:

A: Which you helped specify, recommend or approve in the last 12 months?

B: Which you plan to help specify, recommend or approve in the next 12 months?

A	B	
1 ☐	☐	$100 million and over
2 ☐	☐	$50 - $99.9 mill
3 ☐	☐	$25 - $49.9 mill
4 ☐	☐	$20 - $24.9 mill.
5 ☐	☐	$10 - $19.9 mill.
6 ☐	☐	$5 - $9.9 mill.
7 ☐	☐	$1 - $4.9 mill.
8 ☐	☐	$500,000 - $999,999
9 ☐	☐	Under $500,000

18 Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ over $10 billion
2. ☐ $1 to $9.9 bill.
3. ☐ $500 to $1 bill.
4. ☐ $100 to $499.9 mill.
5. ☐ $50 to $99.9 mill.
6. ☐ $10 to $49.9 mill.
7. ☐ $5 to 9.9 mill.
8. ☐ under $5 mill.

19 Estimated number of employees for your entire corporation:

1. ☐ over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ under 500

20 Which of the following ISDN products do you plan to purchase in the next 12 months? (check all that apply)

1. ☐ Besic Rate Interface Terminal Adapters
2. ☐ Primary Rete Interface Equipment
3. ☐ Voice/Deta terminals
4. ☐ Voice-only terminals
5. ☐ Deta-only terminals

21 From which of the following vendors will you consider buying your PBX/Central Office Switch? (check all that apply)

A PBX	B COS	
A ☐	☐	AT&T
B ☐	☐	ALCATEL
C ☐	☐	ERICSSON
D ☐	☐	FUJITSU
E ☐		HARRIS
F ☐		HITACHI
G ☐		ROLM
H ☐		INTECOM
I ☐		MEMOREX TELEX
J ☐		MITEL
K ☐	☐	NEC
L ☐	☐	NORTHERN TELECOM
M ☐		SAMSUNG
N ☐	☐	SIEMENS
O ☐		STROMBERG-CARLSON
P ☐		TOSHIBA
Q ☐	☐	OTHER ____________

NETWORK WORLD
The Newsweekly of Enterprise Networking Strategies
An IDG Publication

91NN

Worth Noting

"Exiting 1991, Banyan will be the most open and flexible standards-based enterprise network available."

David Mahoney
President and chief executive officer
Banyan Systems, Inc.
Westborough, Mass.

Netnotes

Xyplex, Inc. recently introduced upgrades for its existing internetworking software line and added a new bridge to its line of highly reliable internetworking products.

Version 1.2 of the Xyplex software now supports parallel remote bridging, which lets net managers configure multiple bridges and wide-area network links between two local-area networks. Previously, customers could only use secondary links if the primary line failed. The software will begin shipping to registered users this month.

The new bridge, MAXserver 3010 Local Bridge, is an Ethernet local bridge that acts as a smart repeater, filtering packets by source address, destination and protocol type.

The MAXserver 3010 is available now for $3,695.

Digital Communications Associates, Inc. and **Microsoft Corp.** have released a new version of the DCA/Microsoft Select Communications Server (Select CS). Version 1.01 is an update of existing OS/2-based local-area network communications software that lets Select CS DOS clients run under Microsoft Windows 3.0.

Select CS 1.01 will allow users to load multiple DOS programs or a mixture of DOS and Microsoft Windows programs while Windows switches between them and manages their memory consumption.

Select CS 1.01 is available now and is priced from $2,995 to $8,995, depending on configuration. ◘

Lotus' Notes product chief details specifics of offering

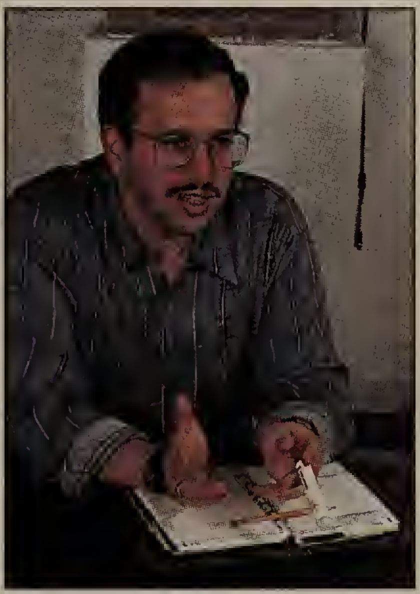
Discusses applications, new directions for the tool.

Q&A Ever since the introduction of Lotus Notes, Lotus Development Corp. has faced the challenge of educating users about the new ways the product can be used to create, access and share information.

Notes, using shared data bases and electronic mail, stores and indexes information on a local-area network server so it can be structured, accessed and maintained in a variety of "views."

Notes workstations — IBM-compatible personal computers running Microsoft Corp.'s Windows 3.0 or IBM OS/2 — and the OS/2-based Notes server can coexist on any of the popular network operating systems.

Eric Sall, director of product management for Lotus Notes, defines the software, discusses its applications and explains the strategy and future direction of the product with *Network World* West Coast Bureau Chief Timothy O'Brien.



Eric Sall

What was the vision that led to Notes? How did the product come to fruition?

We began our development process back in 1984, and we introduced the product in 1989. When we were thinking about designing Notes, we felt we really had to solve the problem of organizational, geographic and even technical distance between groups in order for it to be a pragmatic and realistic product.

This led to the capability in Notes called replication, which basically means one Notes server calls up another Notes server and sends over the changes and shared files since the last time they talked. This is quite dramatic because it means you can have virtual work groups or logical work groups that don't necessarily map one-to-one to a LAN.

The other thing that we felt was important for Notes was the ability to easily import and export information. Notes has interfaces to all the major word processing formats, graphic formats, scanned images, arbitrary data base streams [such as field names and values], spreadsheets and regular text. We also opened our [application program interface] so that people could write their own applications that could access a Notes data base or bring information from another data base.

Version 2 supports application integration with Dynamic Data Exchange and Object, Linking & Embedding, which allows us to link to a variety of applications in the [Microsoft Corp.] Windows or Presentation Manager environments. Also, we can create live links to information in other environments.

We also felt it was important that we embrace as many standards as we could in the design of Notes and continue to develop along those lines. For instance, we're doing an X.400 gateway and we're interested in doing X.500 once it settles down a bit. We've been working on data base interfaces, too.

What kind of specific applications can be addressed by Notes?

If you look at a [matrix with six blocks, three blocks wide and two blocks high] that shows levels of increasing activity across the bottom axis and increasing structure on the vertical axis, you can see the range of what Notes does.

In the first column of the matrix, Notes can be used for disseminating information, making it available to people in the organization. The next column to the right is a little more interactive, providing for the routing of information, sending it to some known or named individual or group. The last column is interacting; information is coming from anyplace and going anyplace in a much less predictable way.

The vertical axis shows increasing structure. The lower of the two boxes in the first column could be a news application like a daily or weekly newsletter or an interface to a real-time news wire which would provide information that would be organized and then disseminated via interest categories to users.

(continued on page 26)

Reducing FDDI connection costs

Method	Advantages	Disadvantages
Alternative fiber solution:	• Relaxing standard specifications on LED power levels can reduce the cost of optoelectronic components for shorter distances.	• Fiber must be installed. • Cost of components high compared to copper solutions.
Unshielded twisted pair:	• Majority of users have this type of wiring in place. • Uses inexpensive electronics rather than optoelectronic components in each workstation.	• Wire picks up cross talk; signal must be filtered. • Wire radiation may exceed FCC specifications at FDDI data transmission rates.
Data-quality unshielded twisted pair:	• Higher quality transmissions than typical unshielded twisted pair (signal does not require filtering). • Low-cost electronics.	• Requires installation. • Wire radiation may exceed FCC specifications at FDDI data transmission rates.
Shielded twisted pair:	• No interference problems. • No radiation problems. • Low-cost electronics.	• More expensive than unshielded twisted pair. • Requires many users to install new wiring.

Because of the short distances between wiring closets and workstations, alternative methods can be used to reduce connection costs to networks based on the FDDI standard.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: *NETWORK WORLD*

Standards teams take on FDDI roadblocks

Groups try to resolve problems with network management and the high cost of components.

By Salvatore Salamone
Features Writer

ST. PETERSBURG, Fla. — Standards groups are making progress in resolving the network management and cost problems that have hindered wide-scale acceptance of Fiber Distributed Data Interface networks.

At the ANSI X3T9.5 meeting here last month, the working group tackling FDDI station management (SMT) met for two days to consider letter ballot comments on the latest version of the SMT document.

In addition, two ad hoc working groups — one covering alternative media, the other exploring ways to use lower cost electro-optic components — examined ways to reduce the costs of bringing fiber to the desktop.

The FDDI standard, when completed, will comprise four documents. Three of these — defining optical specifications, a data encoding scheme, and packet formation and addressing — have been finalized and approved.

The last document, which has yet to be completed, covers station management, defining error detection and recovery methods, and specifying all FDDI management services. Last December, a draft of the latest version of the SMT document was sent out for comments in a letter ballot.

A principal suggestion emerging from the letter ballot was that the SMT Management Information Base (MIB) be converted to Guideline Definitions for Managed Objects (GDMO), according to Bruce McClure, chairman of ANSI's FDDI-2 working group, and chairman and executive vice-president of Synernetics, Inc., a manufacturer of FDDI equipment and station management software. The GDMO is a proposed International Standards Organization standard that defines how network objects are managed.

The format of the MIB in the existing SMT document is not consistent with today's international standards, according to Wayne Foco, an associate programmer and communications architect within IBM's Communications Systems group in Raleigh, N.C.

For example, if a local network using the Simple Network Managent Protocol is connected to an FDDI net, it would be impossible to use the same system to manage both networks because the objects defined in the respective MIBs would be different.

Besides the suggestions to convert MIBs to GDMO, this last round of balloting drew hundreds of comments, according to McClure. The number of responses was so large that an interim document incorporating all of the comments will be assembled and distributed for review before the next meeting in June.

(continued on page 26)

9:45 P.M. Welcome. This is Guest Messaging. You received one call before you checked in. Message one: "John, this is Ted. They moved our meeting up to 8:30. I'm not sure where, yet. I'll call you in the morning to let you know." *10:00 P.M.* "I'd like a wake-up call for 6:00 A.M. And can you put a Do Not Disturb on my phone? Thanks." *10:06 P.M.* We're sorry, room service is now closed. You can place a breakfast order by pressing 3. 3DEF "I'd like two eggs, over easy, with bacon. Make sure the bacon's crispy. Toast, lightly buttered. Freshly squeezed orange juice. And coffee, black. To room 235 at 6:15." *6:00 A.M.* Good morning. This

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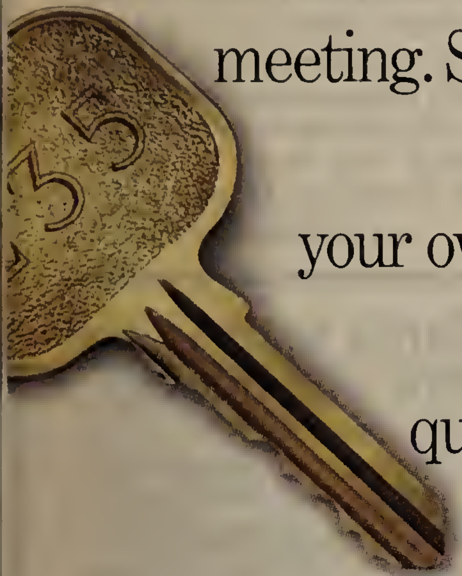

is your wake-up call. Message You have one new voice message. Message one: "John? Ted again. Don't forget to bring the revised contract to the meeting. Still don't know what room we're in." *7:00A.M.* To record your own personal greeting, press 7. 7 PRS "I just went down for a quick workout. I'll be back in a few minutes. Leave your message at the sound of the beep."

7:20A.M. Message You have one new voice message. Message one: "John, we're in the Green Room. See you there at 8:30. Oh, and that fax number you need is 555-4473." *8:00A.M.* "Checking out? By the way, Mr. Siebert, if you need to hear any of your existing voice messages, you can access them for 24 hours. Just call us."

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Lotus' Notes product chief details specifics

continued from page 23

Something with more structure [in the box above that] would be a reference application; this could be a policy and procedures handbook, marketing research library or contract library. So again, the idea is that you are preparing it in one place and making it available to many [users].

In the bottom of the next column, Notes includes a full electronic mail system that we see as part of the product's basic functionality. We also view E-mail as an application for Notes, like a spell checker would be to a word processor. Something more structured [and in the box above that] would be a forms routing application, travel authorization or purchase orders that need to be routed and tracked.

In the bottom of the third column would be discussions. This could be a product design group interacting about the next version of a product or a special interest group brainstorming session. Something more structured along those lines would be a tracking application. The project tracking could be sales-led management, a help desk or a call reporting system.

One of the ways to understand Notes is to draw an analogy to 1-2-3. If you take 1-2-3 out of the box, it's really a tool that you apply to lots of different problems. You use the product with a template, or you take it and customize it based on the functionality of the product itself. The real power of 1-2-3 was that mortals could design their own applications.

Notes is analogous. It is a tool for group communications. You can use the templates we provide, and you can also customize those to solve certain problems using your own language and following your own procedures.

How would a user build an application?

There are two constructs: forms and views. Forms are the way data is input into the system and presented back as documents, while views are the way those documents are selected, sorted and categorized. By designing and customizing these forms and views, you create different applications. The difference between applications has to do with how much structure the forms use and what kinds of views you design to use that flexibility.

So in designing an application, a user would create screens for data input and then the information would be compiled in the same way a data base would use a report writer?

One function within Notes is a data base, but it is document-oriented rather than a highly structured numbers-oriented data base. The difference is that a document-oriented data base is optimized around the handling of documents, com-

(continued on page 54)

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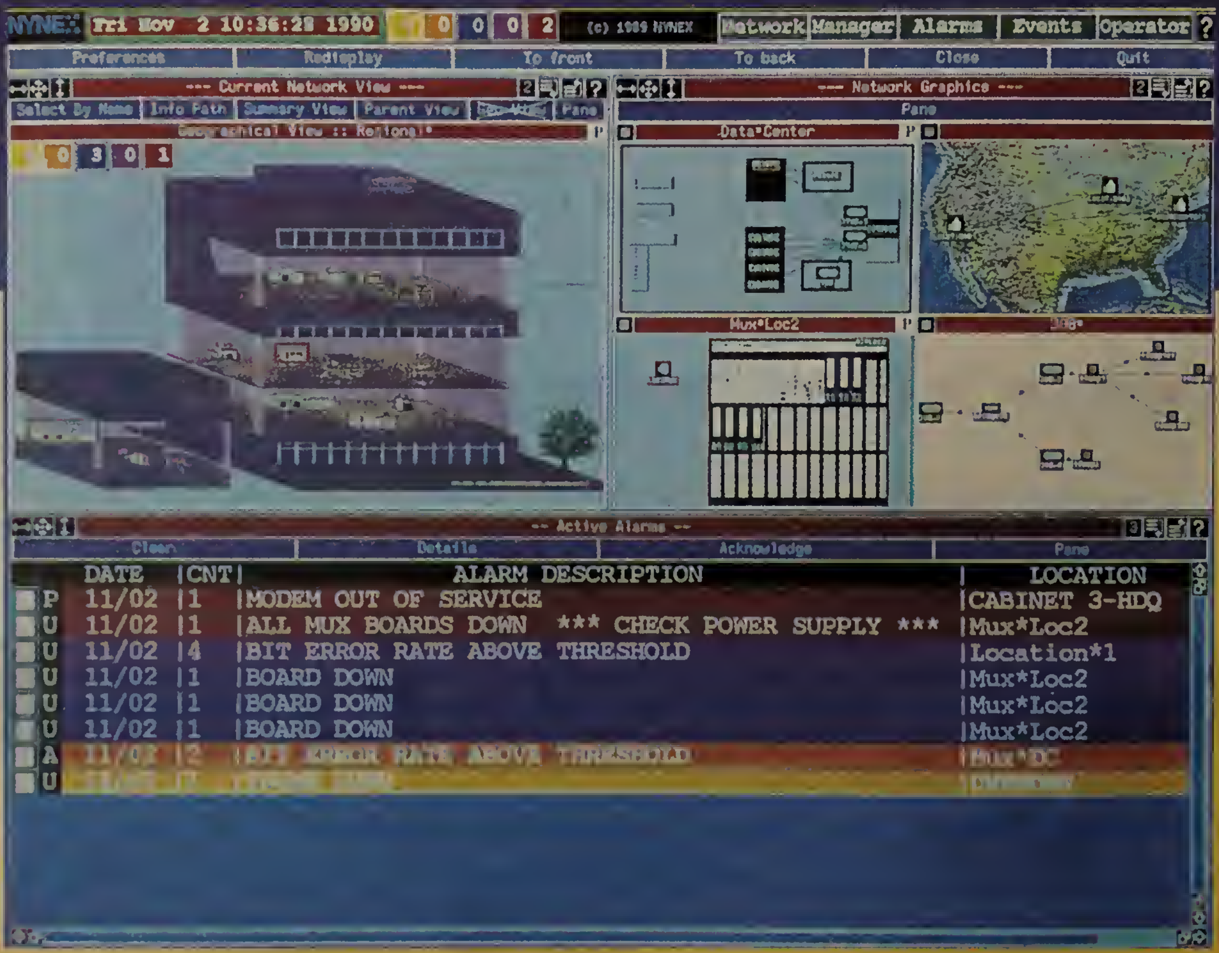

```
    DATE  |CNT|          ALARM DESCRIPTION                        |   LOCATION
 P 11/02 |1   |MODEM OUT OF SERVICE                               |CABINET 3-HDQ
 U 11/02 |1   |ALL MUX BOARDS DOWN  *** CHECK POWER SUPPLY ***    |Mux*Loc2
 U 11/02 |4   |BIT ERROR RATE ABOVE THRESHOLD                     |Location*1
 U 11/02 |1   |BOARD DOWN                                         |Mux*Loc2
 U 11/02 |1   |BOARD DOWN                                         |Mux*Loc2
 U 11/02 |1   |BOARD DOWN                                         |Mux*Loc2
 A 11/02 |2   |BIT ERROR RATE ABOVE THRESHOLD                     |Mux*DC
 U [illegible]
```

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Standards teams take on FDDI roadblocks

continued from page 23

At that point, a new version of the document will be generated. "The goal is to have [this] new working document out in the July time frame," McClure said. Another round of letter balloting will then occur. Committee members say the end of this process is in sight, and most believe SMT will be wrapped up by year end.

Lowering costs

Recognizing that the high cost of FDDI connections will hinder the adoption of such networks, both ad hoc working groups within the X3T9.5 group are exploring ways to reduce costs. Their efforts are in the preliminary stages, however.

While one group is exploring the use of alternative media, the other is investigating whether the standard's specifications can be relaxed in certain cases.

The FDDI standard specifies use of LED transmitters capable of generating an 11-decibel signal, a level that is needed to maintain adequate signal strength and low bit error rates over the maximum allowable cable run of 2 km. Since many connections will be shorter, that much power is not necessary.

The ad hoc group exploring lower cost components believes that less expensive light sources, receivers and connectors can be used in shorter cable runs.

The cost savings of this approach have already been demonstrated. Earlier this year, Digital Equipment Corp. introduced a four-port board for an FDDI concentrator that uses LEDs with an 8-db power level. The unit was designed to support workstations up to 200 meters away.

The cost savings with the lower powered light sources amounted to $1,000 for the unit, or $250 per connection, according to Karl Pieper, DEC's FDDI marketing manager.

If shorter distances are standardized by the working group — 100 meters seems to be the distance of choice — theoretically, even lower cost components could be used, according to Pieper. Such savings are significant since the prices of FDDI concentrators at the start of this year were between $5,000 and $6,000.

The other ad hoc working group is exploring use of alternative media, such as copper-based unshielded twisted pair, data-quality twisted pair and shielded twisted pair. Using any one of these three wire types in place of fiber in horizontal cable runs would allow users to replace optoelectronic components with electrical devices that are less expensive. ◻

MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

Dialogue

During the request-for-proposal process, how difficult is it to obtain detailed technical information from vendors?

"It varies; some are very technically proficient, while others don't have a real grasp at all. This is more true when it comes to a big network installation. The larger the project, the more difficult it is to find vendors that can provide you with solid information.

"It's frustrating, so I've learned not to depend on vendors for technical information. Instead, I do extensive testing of each product. No product is right until I say it's right."

Mel Moulton
Network planning manager
Rockwell International Corp.
Dallas

"It can definitely be a problem. But most of the products are so technical that you can't blame the vendor for not dumping volumes of information on you. The problem is more easily resolved if the user knows the right questions to ask. The more specific you are in the process, the better off you'll be. If you're interested in getting the best product you can, you have to keep working through the vendor until you find the right technical people to answer your questions."

Wallace Knapp
Director of computer services
Catonsville Community College
Baltimore

"It's not really a problem. With things becoming standards-based, it almost comes down to cost comparisons and our previous relationship with a particular vendor. How their products have worked for us in the past comes into heavy play when we evaluate their RFP."

Ted Lipsky
Telecommunications
project director
University of Miami
Coral Gables, Fla.

"It's very difficult. I've been trying to find an FDDI-to-DS3 bridging product, and I've spoken to five vendors who say they can provide me with one. But the technical information they've sent is sketchy at best."

Robert Golobic
Network planner and designer
R.J. Reynolds Tobacco Co.
Winston-Salem, N.C.

Networking key to Pitney Bowes service performance

Dial-up solutions fix fax machine malfunctions.

By Wayne Eckerson
Senior Editor

MELBOURNE, Fla. — As companies increasingly compete on the basis of customer service, Pitney Bowes, Inc., a maker of facsimile machines and other office equipment, is using networking to stay a step ahead of the pack.

Instead of requiring customers to bring malfunctioning fax machines to repair centers, technicians at a Pitney Bowes technical center here can repair most problems remotely by dialing into a customer's fax machine and resetting communications and control parameters.

A group of 30 technicians at the company's National Diagnostics Center (NDC) can remotely modify fax software that controls between 60 and 120 functions, including transmission delays to accommodate satellite links, decibel levels for transmission output, memory settings and display levels. The technicians can also download electronic error reports for use in identifying performance patterns.

This remote repair capability, which is only available for Pitney Bowes' fax machines, takes an average of 20 minutes. Typically, users either take faulty equipment to a dealer or have a technician dispatched to fix the problem.

Of the 1,600 calls to NDC each day, Pitney Bowes handles 75% of them remotely, according to Michael Armstrong, vice-president of product planning and technical support at Pitney Bowes Facsimile Systems in Stratford, Conn.

The remainder of the calls, which typically involve hardware problems, are handled by one of 4,000 Pitney Bowes technicians based in 18 regional centers throughout the country. These field technicians arrive at the customer site within an average of 4½ hours, Armstrong said.

When a Pitney Bowes customer calls NDC, a technician there calls up the customer's name, address, type of fax machine and other information stored on twin IBM 3090 mainframes in Danbury, Conn. The employee then hits a hot key to obtain the service history of the customer's machine.

For simple problems such as paper jams, the technician tries to talk the caller through the repair. If the problem is software- or communications-oriented, the technician will dial into the customer's fax machine and download its system software to a master facsimile machine or personal computer at NDC.

Often, the technician down-

(continued on page 28)

EXECUTIVE BRIEFS

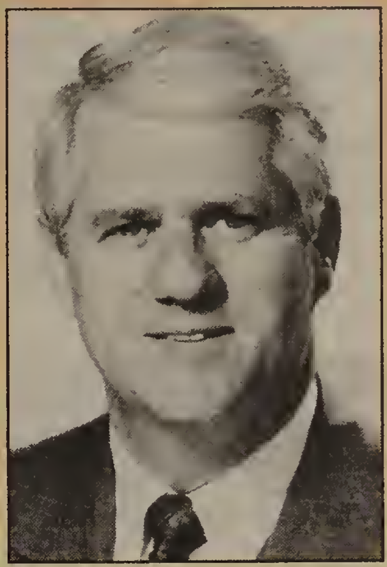
The right side of the law. Companies that need legal advice governing the use of intercompany electronic communications can turn to a new book by lawyer Benjamin Wright called *The Law of Electronic Commerce — EDI, Fax and E-Mail: Technology, Proof and Liability*. The 464-page book addresses a variety of topics, including the reliability and confidentiality of electronic messages, the legal basis of electronic signatures and admitting electronic messages as courtroom evidence.

The book, available next month, is priced at $95. It can be ordered from the Law Division at Little, Brown and Co. by calling (617) 227-0730.

Sitting tight during the recession. Turnover among computer professionals is at a 10-year low, a result of the tight economy and hiring freezes imposed by many firms.

That's according to Edward Perlin, president of Edward Perlin Associates, Inc., a New York-based management consulting firm that monitors compensation and hiring trends in the computer industry.

The lack of turnover among information systems (IS) professionals is limiting career advancement opportunities. However, while IS staffers are staying put for the time being, that will change drastically once the economy picks up, Perlin said.



"The tremendous increase in the volume of data being exchanged is going to force companies to reevaluate the need for data exchange. Is there a better solution? Can we develop new processes that eliminate the need to exchange data altogether?"

Joseph Phelan
Executive director,
Automotive Industry Action Group
and manager of corporate EDI,
Ford Motor Co.

EDI's future in the automotive industry

Automotive Industry Action Group's Joseph Phelan discusses carmakers' new challenges.

Q&A Founded in 1982, the Automotive Industry Action Group (AIAG) is one of the oldest groups devoted to developing and implementing industry standards for electronic data interchange and other related activities, such as bar coding, purchasing and computer-aided design.

With 700 members, including the Big Three automakers, AIAG maintains more than 60 automotive-specific EDI and other standards. In addition, it sponsors educational workshops and holds an annual conference called AUTO-TECH.

Overseeing AIAG this year is Executive Director Joseph Phelan, who is on sabbatical from Ford Motor Co., where he serves as manager of corporate EDI. Phelan last week spoke with *Network World* Senior Editor Wayne Eckerson about the future of EDI in the automotive industry, among other issues.

What are AIAG's major goals in the next five years?

Our major thrust is expanding implementation of EDI to second-tier suppliers. We are not quite sure how to do that yet, but we are looking into it.

We also want to focus on other forms of electronic communications that would allow trading partners to more easily exchange engineering data, such as CAD/CAM and image. We have to look at how to consolidate EDI, E-mail and engineering data all onto the same network.

Do you have any clues on how that might be accomplished?

Slowly and carefully. I know that Ford, as well as some of the big [value-added] network providers, is developing a strategy to support this type of advanced communications. But nobody is ready to jump out there with a full-blown solution.

Companies in a variety of industries are expressing interest in faster forms of EDI, notably fast batch and interactive EDI. What steps is AIAG taking to facilitate the development and standardization of real-time EDI?

> We have to look at how to consolidate EDI, E-mail and engineering data onto the same net.

▲▲▲

A few years ago, we evaluated both fast batch and interactive EDI and found little support for them within the industry. The one exception is Chrysler [Corp.], which uses fast batch [to receive shipping notices from suppliers.]

However, Ford has tied a number of their suppliers directly online to some of their in-house systems, such as inventory, scheduling and engineering, to give suppliers added information so they can make better decisions.

This may be telling us that the next step in electronic communications between trading partners is some kind of interenterprise

(continued on page 28)

EDI's future in auto industry

continued from page 27

system, such as shared data bases. It's not clear, however, how far the [automakers] are going to take this.

But aren't there some real risks in opening up your data bases to suppliers?

Absolutely. But if you want to make real gains, you have to take real risks.

The tremendous increase in the volume of data being exchanged is going to force companies to reevaluate data exchange. In other words, is there a better solution? Can we develop new processes that eliminate the need to exchange data altogether?

So you are saying the major advantage of EDI is not in the technology but in reengineering the business processes?

Absolutely. EDI is an enabler. It lets us do new and great things with business processes. And that's where the real value is.

For example, many companies have eliminated invoices, using a process called evaluated receipt settlement.

We didn't make the invoice electronic; we just did away with it. As long as there is a purchase order and a receipt, both parties know what to pay. It's simply a matter of multiplication. So why go through all the effort of generating, mailing, receiving, storing and reconciliation?

Are there other processes that need to be reengineered?

I think so. For example, take a close look at the logistics process for shipping and receiving. If you do the shipping job correctly, the receiving job is almost unnecessary. Once the receiving material comes in, it goes directly to the [assembly] line. This eliminates the need to do all that receiving, checking and inspecting.

Large EDI users — such as the Big Three automakers — have been criticized for forcing EDI on their smaller suppliers. Do the small EDI users view it as a boon or a burden for their businesses?

If [the automakers] could do it over again, we probably would take a different approach with small suppliers. For example, like the automakers, [Sears, Roebuck and Co.] had been doing EDI for a long time and wanted to expand its EDI trading partner base. But having seen what happened to us, they stopped short.

Instead of mandating that their suppliers get on-line with EDI by a certain date, Sears provided the suppliers with a turnkey solution that was more application-oriented than EDI-oriented.

It's hard to educate the small supplier about EDI. You need to give them a turnkey process that allows them to fill in the blanks and go. We've also tried to impress upon them the value of integrating EDI into their business applications, not just viewing EDI as a burden or an automaker demand.

How successfully has the auto industry moved from proprietary to cross-industry EDI standards?

Very successfully. Ford and Chrysler have completed the migration away from proprietary solutions and are fully ensconced in the X12 environment.

GM, which is more decentralized than Ford or Chrysler, is in the process of moving over. But

(continued on page 54)

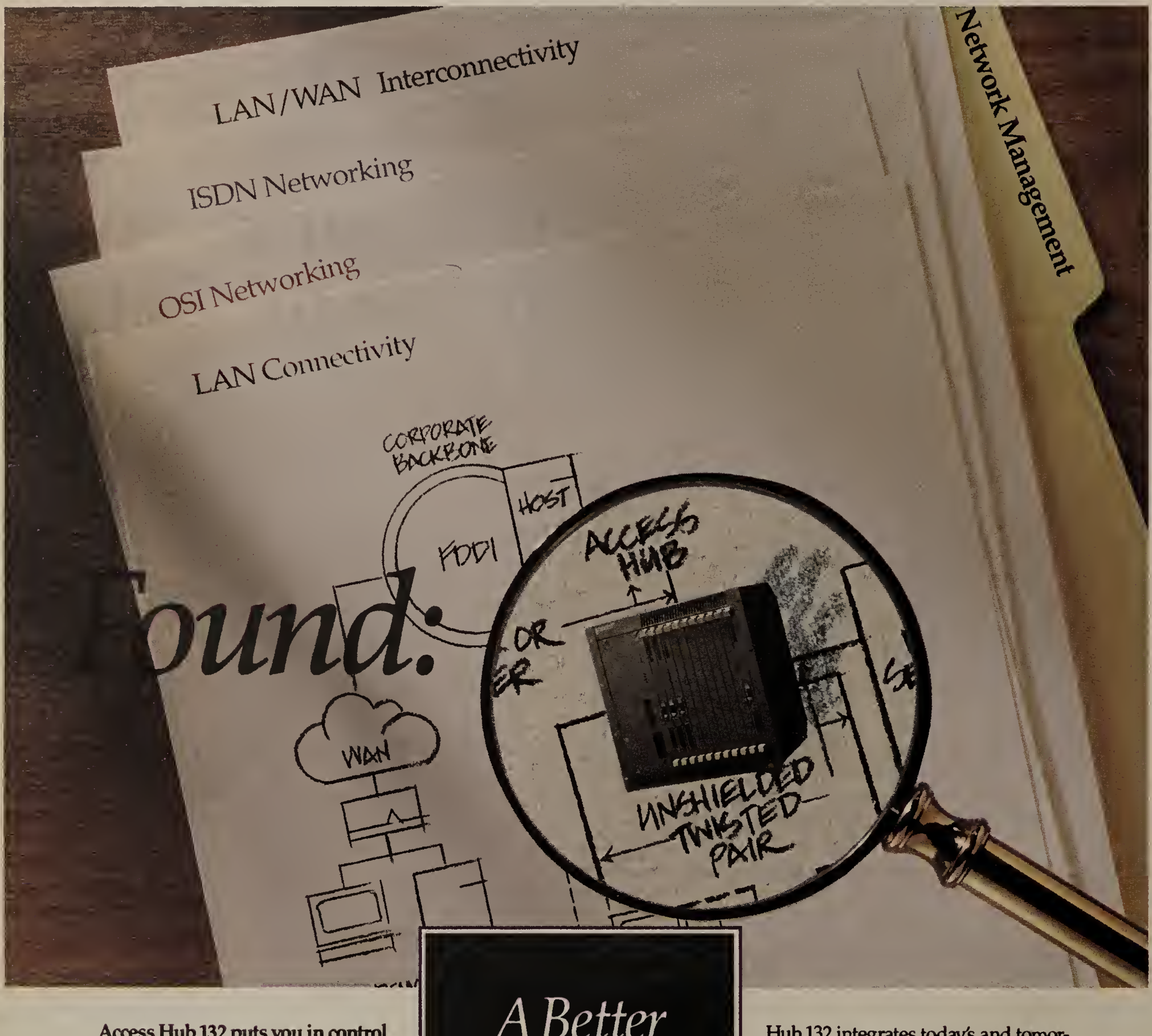
Network key at Pitney Bowes

continued from page 27

loads an electronic report that lists the last 20 errors that occurred in the machine.

The technician then analyzes the data, adjusts the parameter settings and uploads the software to the customer's fax machine. These adjustments can, for example, compensate to some degree for line noise on circuits carrying the customer's fax traffic.

"Facsimile has become critical to lots of businesses, and we feel our remote diagnostic repair gives users the service they want," Armstrong said.



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INTERNATIONAL NETWORKS

USER STRATEGIES, INTERNATIONAL SERVICES & REGULATION

World News

AT&T and **Communications Satellite Corp. (COMSAT)** recently said they have teamed up to form a new company that will provide domestic and international digital private-line services to Venezuela.

The new company, **Transporte Digital de Informacion,** is based in Caracas, Venezuela, and will provide international digital private-line services via satellite, using an earth station built by COMSAT's Systems Division.

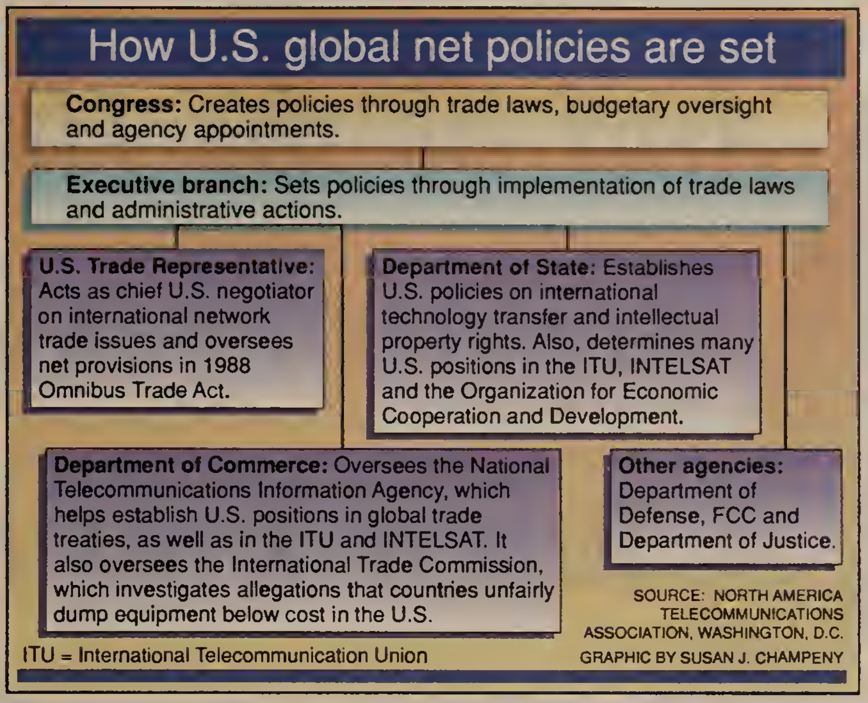
The **International Telecommunications Satellite Organization (INTELSAT)** recently completed its 17th annual Global Traffic Meeting, where traffic predictions were prepared for INTELSAT services.

INTELSAT expects the use of digital facilities for international public switched services to double over five years.

The Indian Ocean region is expected to experience the greatest traffic growth. Service usage in that area should increase as much as 23% during the next five years.

INTELSAT said use of digital facilities for public switched telephone services increased 45% from 1989 to 1990, while use of analog facilities for public switched services decreased 11.5%.

INTELSAT reaped 22% of its revenues last year from digital services, with 14% coming from public switched services and 8% coming from International Business Service private-line services.



How U.S. global net policies are set

Congress: Creates policies through trade laws, budgetary oversight and agency appointments.

Executive branch: Sets policies through implementation of trade laws and administrative actions.

U.S. Trade Representative: Acts as chief U.S. negotiator on international network trade issues and oversees net provisions in 1988 Omnibus Trade Act.

Department of State: Establishes U.S. policies on international technology transfer and intellectual property rights. Also, determines many U.S. positions in the ITU, INTELSAT and the Organization for Economic Cooperation and Development.

Department of Commerce: Oversees the National Telecommunications Information Agency, which helps establish U.S. positions in global trade treaties, as well as in the ITU and INTELSAT. It also oversees the International Trade Commission, which investigates allegations that countries unfairly dump equipment below cost in the U.S.

Other agencies: Department of Defense, FCC and Department of Justice.

ITU = International Telecommunication Union

SOURCE: NORTH AMERICA TELECOMMUNICATIONS ASSOCIATION, WASHINGTON, D.C.
GRAPHIC BY SUSAN J. CHAMPENY

Germany ponders what to do with private networks

Western Germany bans bypassing public nets.

By Barton Crockett
Senior Editor

BONN, Germany — As the Federal Republic of Germany struggles with the arduous task of integrating eastern Germany into its social and economic fabric, network regulators are facing an unusual quandary — what to do with 23 private networks that, in theory at least, should not be allowed to exist.

These nets were built with permission from the formerly German Democratic Republic government, which agreed to let organizations such as the Stasi secret police and the country's chemical manufacturers build relatively modern voice and data networks using facilities separate from the public network serving the rest of the country.

The problem now is that both eastern and western Germany are subject to the same net regulations and western Germany prohibits private nets that bypass public net facilities.

"We now have to find a solution to this problem that is in accordance with our telecommunications law," said Peter Bross, department head for network regulations at Germany's Ministry of Posts and Telecommunications here.

Postmerger problem

Bross said officials in the ministry discovered the private networks when analyzing eastern Germany's network infrastructure after the reunification of the two nations.

As part of that reunion, control of eastern Germany's public network was ceded to western Germany's national carrier, Deutsche Bundespost Telekom, and management of eastern Germany's network regulations was taken over by western Germany's Ministry of Posts and Telecommunications.

The Federal Republic plans to spend about $40 billion over the

(continued on page 32)

FCC plans to balance global service rates

Foreign carriers' rates would more closely reflect actual cost of service, save U.S. providers millions.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The FCC recently proposed a new set of rules that it said would help drive international rates down closer to the cost of providing service and save U.S. carriers about $500 million annually in payments to foreign carriers.

Federal Communications Commission Chairman Alfred Sikes claims there is a serious imbalance in the rates that foreign carriers charge U.S. carriers to terminate calls abroad and the corresponding rates charged by U.S. companies.

According to Sikes, accounting rates charged by foreign carriers are set as much as 50% above cost.

In addition, some European carriers are discriminating against the U.S. by charging U.S. providers higher accounting rates than they charge carriers in European countries, said FCC Common Carrier Bureau Chief Richard Firestone. He said U.S. carriers may be paying between 50 cents and $1.40 more per minute than their European counterparts.

Although U.S. carriers have been negotiating with foreign carriers to reduce international accounting rates, Sikes said that is not enough. In its order, the agency voted to streamline the procedures for changing accounting rates to make it easier for foreign providers to voluntarily reduce rates.

But the FCC also proposed a set of rules that would attempt to force foreign carriers to negotiate lower rates with their U.S. counterparts. The agency suggested setting up benchmarks for the U.S. carriers to use in bringing rates down by Jan. 1, 1993.

If rates have not come down significantly by then, the FCC is proposing to mandate a maximum amount that U.S. carriers can pay for foreign carriers to terminate calls in their countries.

If the FCC is successful in bringing down international accounting rates, that will likely drive down the prices U.S. users pay for international services. A variety of other factors, including the number of calls terminated in the U.S. by foreign carriers, determine the actual service prices.

Sikes said the bloated rates paid by U.S. carriers coupled with a higher volume of outgoing than incoming international calls has fueled a telecommunications trade deficit of almost $3 billion.

In a related item, the FCC proposed rewarding foreign carriers that allow resale of international services by mandating that U.S. carriers offer reciprocal international resale. Currently, U.S. providers are allowed to offer international resale but are not mandated to provide it.

> Accounting rates charged by foreign carriers are set as much as 50% above cost.
>
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French regulatory officials opt for digital cellular service over PCNs

Ministry director calls PCNs political ploy on part of the British.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — On a recent trip to the U.S. capital, French regulatory officials outlined plans for new radio communications networks in France — plans that don't include personal communications networks (PCN).

Bruno Lasserre, director of regulatory affairs at the French Ministry of Posts, Telecommunications and Space, said France will first examine its success in introducing digital cellular service before making a commitment to PCN technology.

Lasserre downplayed the significance of PCN. "PCN is a concept that has been invented by the British," he said. "The concept is more a political one than a technical one."

France's lukewarm response to PCN stands in stark contrast to the enthusiasm among American telecommunications and computer firms. Something of a gold rush mentality has taken root domestically among companies eager to win the coveted PCN spectrum licenses from the Federal Communications Commission.

Last March, the French Ministry awarded two competing licenses for 12.5 MHz each in the 900-MHz band to operate cellular systems based on the European Group Speciale Mobile (GSM) standard for digital cellular technology.

One license went to France Telecom, the second to Societe Francaise du Radiotelephone, a wholly owned subsidiary of the Compagnie Financere pour le Radiotelephone (COFIRA) consortium. The two currently operate competing analog systems in the 450-MHz band.

COFIRA's five partners include one U.S. carrier, BellSouth International, Inc., which holds a 4% interest. Both digital cellular systems should be complete by 1992.

PCN is an emerging microcell-based technology, which will support voice and high-speed data communications. Industry consensus suggests that PCN networks would operate best between 1,850 MHz and 1,990 MHz, although some have said that PCN is suitable anywhere between 1 GHz and 3 GHz.

"The challenge in France is GSM, not PCN," Lasserre said. "GSM will give us new opportunities to develop radio telephony on a pan-European basis." ◼

Germany ponders over private nets

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next seven years to upgrade eastern Germany's weak public net infrastructure.

Bross said the 23 private bypass networks create a dilemma for German regulators because the technology they use is more modern than what is employed in eastern Germany's public network. In theory, German regulators shouldn't allow the private nets to operate, but they also do not want to dismantle valuable resources that industrial organizations in eastern Germany need in order to do business.

One possible solution is for the networks to be dismantled and reintegrated into eastern Germany's public net infrastructure. Bross said this tack has already been taken with the private net that served the Stasi.

Gorts said Germany faces a large challenge — eliminating wiretaps and bugs pervasive throughout eastern Germany.

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Another possibility is to grant interim licenses that allow private operators to continue running the networks until Deutsche Bundespost Telekom assumes control at some future date.

At a recent international communications conference sponsored by ***BusinessWeek*** in New York, Frerich Gorts, state secretary for Germany's Ministry of Posts and Telecommunications, said German regulators are still evaluating which approach to take with the remaining private nets.

Listening in

Gorts added that Germany faces another, equally large challenge — eliminating wiretaps and bugs pervasive throughout eastern Germany.

"A lot of telephone sets have mikes that allow someone to hear what is being said," Gorts said. "We have to make sure that these telephones are secured and that everybody can talk without being hurt."

Gorts said he is not sure who could be using the bugs but it's possible that the KGB is. He added that as Deutsche Bundespost Telekom takes over eastern Germany's public net, it is systematically trying to eliminate illegal bugs and wiretaps. ◼

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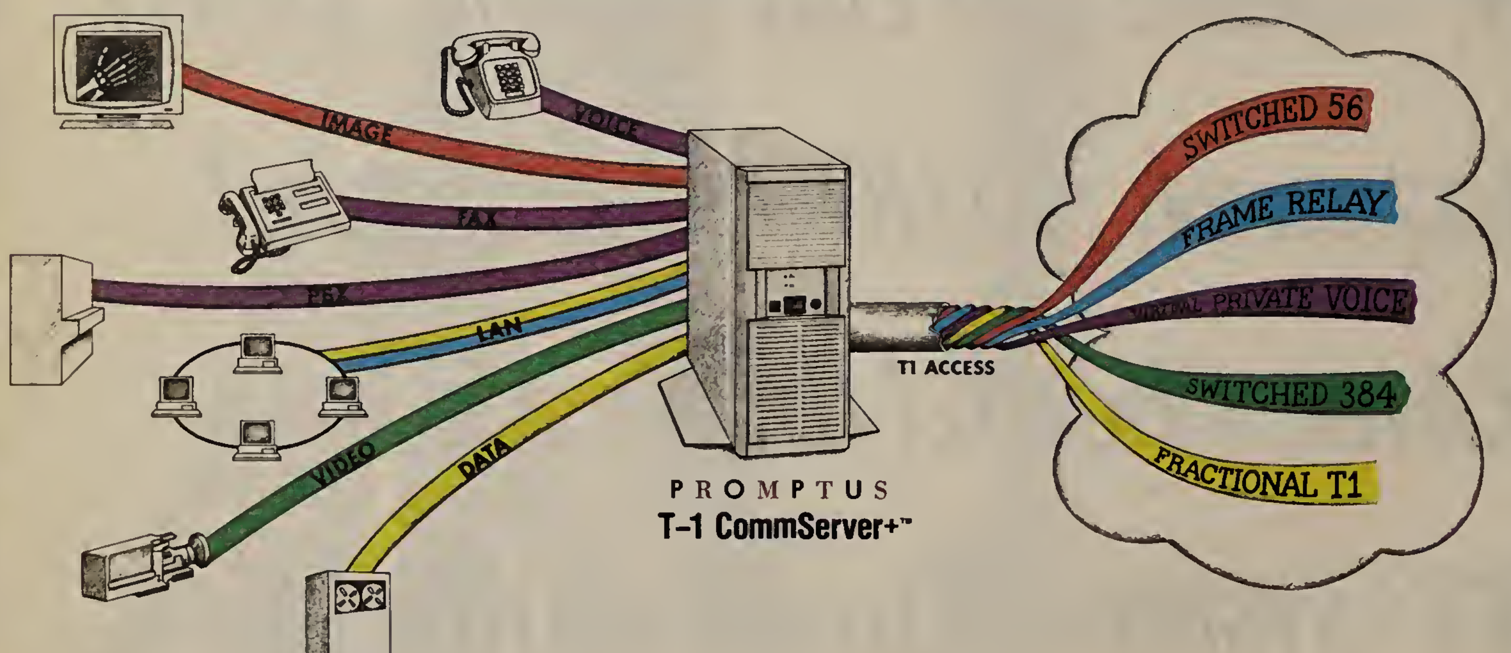

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UDS fax/modem supports TIA Class I standard

Universal Data Systems, Inc. has announced the **Fas-Talk Fax32,** a stand-alone fax/modem that combines a V.32 9.6K bit/sec modem with a 9.6K bit/sec modem, enabling attached devices to send and receive facsimiles. The Fax32 is one of first products to support the Telecommunications Industry Association (TIA) Class I computer-to-fax communications standard.

TIA Class I is an extension of the AT modem command set, providing the basic configuration and control interface that allows software running on any microcomputer to configure and control the fax hardware. TIA Class I controls auto-dial, auto-answer and fax-group selection functions.

The product enables users to send data files and faxes at 9.6K bit/sec while using only one communications port on their microcomputer. The device is said to be fully compliant with the CCITT V.42bis standard for error correction and 4-to-1 data compression, enabling its modem to support throughput at speeds up to 38.4K bit/sec.

The device costs $995 and will be available in June.

Universal Data Systems, 5000 Bradford Drive, Huntsville, Ala. 35805-1993; (205) 430-8000.

Three firms roll wares for terminal emulation

Three companies have separately released terminal-emulation products for the IBM RISC System/6000 microcomputer, packages that provide emulation of 3780/2780 and 3270 terminals for communications with IBM hosts, and 5250 emulation for communications with IBM minicomputers.

Firesign Software, Inc. recently introduced 3270 terminal-emulation software for IBM's RISC System/6000.

The product, **3270ix,** runs on RISC System/6000 over IBM's Systems Network Architecture services and is said to comply with IBM's Systems Application Architecture (SAA). SAA compliance pro-

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IMC offers hardware print server

By Caryn Gillooly
Senior Editor

SUNNYVALE, Calif. — IMC Data Manager recently announced a dedicated Ethernet network print server that can be configured with 10 to 18 printer ports.

The XL-Series print servers meet Ethernet/IEEE 802.3 10-Base2 specifications. They can be installed on heterogenous networks and accessed using Novell, Inc.'s NetWare, Digital Equipment Corp.'s Local Area Transport and Sun Microsystems, Inc.'s Network File System. They support optional Transmission Control Protocol/Internet Protocols.

According to Steve Gayle, sales manager at IMC, the advantages of hardware print servers over software servers is that software servers, although sometimes less expensive and easier to reconfigure, are operating system-dependent.

Operating systems must be interoperable if more than one is to share a print server. Software-based print servers must be loaded into every station on the network, potentially sapping valuable personal computer memory.

Gayle said the base unit XL-100 has eight serial and two parallel ports, while larger, higher models can be configured to as many as 18 ports.

The ports can also be prioritized to automatically switch a print job to another available printer as opposed to queuing jobs until specified printers are available. The XL-Series can be configured from a front panel display or through software provided by the company.

The server can route data to serial ports at up to 115K bit/sec

(continued on page 35)

Xircom rolls out 4/16M adapter for token rings

CALABASAS, Calif. — Xircom, Inc. last week unveiled a 4/16M bit/sec version of its Pocket Token Ring Adapter.

The 16/4 Pocket Token Ring Adapter is an external unit that attaches directly to any portable computer via the machine's parallel port and supports a token-ring connection via IBM Type 1 shielded twisted-pair wiring.

Steve Magidson, vice-president of marketing for Xircom, said the device is especially tailored for laptop, notebook and other portable computers, enabling those devices to plug into the same local-area networks as larger workstations.

The 16/4 Pocket Token Ring Adapter supports Madge Networks, Ltd.'s SmartRing Software. That software enables the interface to use less workstation memory than conventional token-ring adapters, leaving more laptop memory for running applications.

The device also comes with software drivers that support Novell, Inc.'s NetWare, IBM's LAN Support Program and 3Com Corp.'s Network Devices Interface Specification.

The preconfigured SmartRing Software on the adapter routes data into and out of the parallel port. The software also maximizes the operation of the adapter's Texas Instruments, Inc. token-ring chipset, reducing memory requirements for software drivers by as much as half over other adapters.

According to Magidson, the device requires 55% to 60% less memory than other adapters. It consumes only 17K bytes of laptop memory when running its IBM LAN Support driver (vs. 40K bytes for IBM's drivers) and uses only 8K bytes of memory for its NetWare driver (vs. 18K for other NetWare drivers).

The 16/4 Pocket Token Ring Adapter includes an interface for IBM's LAN Support Program, eliminating the need for users to purchase that program separately, Magidson said.

Xircom previously offered a 4M bit/sec token-ring adapter, but it did not support Madge Networks' SmartRing Software, Magidson said. That earlier unit, which will continue to be marketed, is priced at $845.

At a price of $895 per unit, the 16/4 Pocket Token Ring Adapter costs about $1,000 less than docking stations, which allow users to attach laptop portables to token-ring networks, Magidson said. The portability of the unit also enables users to take the devices with them, unlike docking stations, which are often relegated to the desktop.

The 16/4 Pocket Token Ring Adapter is available now.

For further information, contact Xircom at 26025 Mureau Road, Calabasas, Calif. 91302, or call (818) 878-7600.

Latest ALR servers aimed at small users

Available in 486 or 386 configurations, the new line provides an affordable price and room to grow.

By Caryn Gillooly
Senior Editor

IRVINE, Calif. — Advanced Logic Research, Inc. (ALR) recently announced the PowerPro VM Series, a line of local-area network file servers that offer the high performance of a dual-processing machine at an entry-level price.

The VM Series complements the company's existing PowerPro Single Modular Processor/Dual Modular Processor (SMP/DMP) series, the primary difference being that the original machines are only available with Intel Corp. i486 microprocessors while the new machines are available in 80386 configurations as well.

The VM Series devices are intended to offer performance similar to Compaq Computer Corp.'s SystemPro servers at a lower price, according to ALR. Unlike the SystemPro, however, the VMs require users to swap out the motherboard to upgrade a single-processor device to a dual-processor machine. SystemPros come with multiprocessor boards.

Upgrading a PowerPro to dual processing does not require any software changes or upgrades. The server, however, must be running a multitasking network operating system, such as Unix, Banyan Systems, Inc.'s VINES or Microsoft Corp.'s LAN Manager with OS/2. Novell, Inc.'s NetWare does not support dual processing.

According to an ALR spokeswoman, the new servers are targeted at customers that want to start fairly small with a single processor 80386-based server, but that foresee network growth. ALR, she said, has brought a high-end machine down to the entry-level point.

The PowerPro costs less than $5,000 but can be expanded to perform like a $20,000 system, she said. And there is no visible difference to either the user or the application between a single- and a dual-processor environment.

ALR will release 16 machines in the VM Series, Models 1, 150, 330 and 650, are each available in one of four configurations: with a 33-MHz 80386, a 20-MHz 486ASX, a 25-MHz i486 or a 33-MHz i486.

All of the machines can be upgraded to support dual processors in any combination.

Models 150, 330 and 650 will come with 150M-, 330M- and 650M-byte hard drives, respectively. And, according to the company, each model will come with 5M bytes of random-access memory.

Each machine in the series will also be based on a 32-bit architecture, providing a standard 32-bit data path, memory and I/O, according to Laura Robertson, product manager for the SMP/DMP series.

Robertson also pointed out that the machines are SystemPro-compatible, meaning all applications written for the SystemPro will be able to run on any PowerPro.

Robertson added that the SMP/DMP series was the first high-end server to be registered as SystemPro-compatible, and she did not know of any other company that had officially registered its products with that compatability.

> The VM Series devices are intended to offer performance similar to Compaq Computer Corp.'s SystemPro servers at a lower price.
>
> ▲▲▲

The PowerPro VM Series 33-MHz 386 Models 1, 150, 330 and 650 will cost $4,995, $6,495, $7,495 and $8,495, respectively.

The PowerPro VM Series 20-MHz 486ASX Models 1, 150, 330 and 650 will cost $5,795, $7,295, $8,295 and $9,295, respectively.

The PowerPro VM Series 25-MHz i486 Models 1, 150, 330 and 650 will cost $6,495, $7,995, $8,995 and $9,995, respectively.

And the ALR PowerPro VM Series 33-MHz i486 Models 1, 150, 330 and 650 will cost $7,495, $8,995, $9,995 and $10,995, respectively. All will be available in June.

For more information, contact Advanced Logic Research at 9401 Jeronimo, Irvine, Calif. 92718, or call (714) 581-6770.

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The PS/2® Laptop looks great from the outside. But its true beauty lies inside, where you'll find uncompromised computing power. It has the same 386SX™/20 MHz processor found in best-selling desktop models. A 3.5″ 1.44MB disk drive and 2.5″ 60MB fixed disk provide fast access to programs and data, and standard 2MB RAM is expandable to 18MB.

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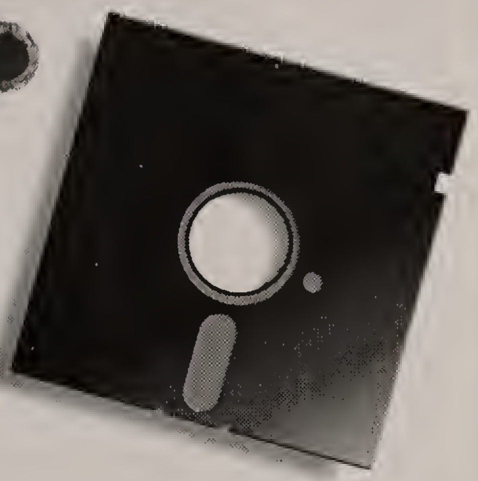

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First Look

continued from page 33

vides for a common user interface and use of pull-down menus, standard function keys and extensive help screens.

The product, which is said to be fully compatible with SNA, IBM's NetView and the AIX Network Management/6000, is written in C language.

The software is available now for $795.

Firesign Software, Inc., 82 Whipstick Road, Ridgefield, Conn. 06877; (203) 431-0213.

Cleo Communications announced a version of its **3780Plus** terminal-emulation product that combines 3780/2780 Remote Job Entry emulation software with Cleo's intelligent **SYNCcable+**, an external communications processor that links to any serial port on a RISC System/6000.

The SYNCcable+ supports a variety of external synchronous modems and leading auto-dialing languages. It also handles asynchronous-to-synchronous protocol conversion.

The 3780Plus and the SYNCcable+ package range in price from $1,095 to $1,995, depending on the RISC System/6000 model used.

Cleo Communications, 3796 Plaza Drive, Ann Arbor, Mich. 48108; (313) 662-2002.

Also, **Andrew Corp.** announced **Handshake-Alliance,** a 5250 terminal-emulation and file-transfer product that enables the RISC System/6000 to communicate with the Application System/400 and other IBM minicomputers. The product is a combination of workstation and host-based software as well as an adapter card for the microcomputer.

Prices for the product range from $3,750 to $4,700, depending on configuration.

Andrew Corp., 19021 120th Ave. N.E., Bothell, Wash. 98011; (800) 776-6174.

Xerox introduces fax machine for larger documents

Xerox Engineering Systems recently announced a facsimile machine that can accept documents up to 24 inches wide. The **Xerox 7124** is compatible with Group 3 fax machines, allowing communications with the installed base of these machines anywhere in the world.

When a D-sized, 24- by 36-inch engineering document is sent to a standard office fax, the output is printed in three strips on roll-fed machines or nine sheets on sheet-fed faxes. Dotted lines are printed on each sheet for document alignment. Documents sent by the machine that are B sized, 11 by 17 inches, and C sized, 18 by 24 inches, will be printed by standard machines in two strips or four sheets, depending on the paper-output method.

At the 9.6K bit/sec Group III transmission rate, it takes approximately three minutes to send a D-sized document. The 7124 uses direct thermal transfer technology and has two resolution settings: 203 by 196 points per inch or 203 by 98 points per inch.

Orders for the 7124 will be accepted in July, with deliveries scheduled for August. The machine will cost $14,995.

Xerox Engineering Systems, Xerox Square-05B, Rochester, N.Y. 14644; (800) 832-6979.

Avatar releases Mac-to-IBM mainframe to support System 7.0

Avatar Corp. last week announced a new version of its MacMainFrame Series Macintosh-to-IBM mainframe product to support the features of System 7.0, the new Macintosh operating system.

MacMainFrame 4.0 supports System 7.0's Publish & Subscribe feature, which will enable users to take information from a MacMainFrame 3270 window and "publish" it to an Apple Computer, Inc. Macintosh application.

The product also supports System 7.0 Help Balloons, which are help screens that cover all the basic features, such as MacMainFrame menus and dialogue boxes, as well as specific screens for status and error conditions that crop up during emulation sessions.

Other basic 3270 enhancements include a special settings feature that enables users to tailor the program for use with custom mainframe applications.

In addition, the feature allows users to configure file-transfer settings, change session defaults and display parameters, among other things.

Until Aug. 31, the product will be delivered free to customers with MacMainFrame Workstation, Gateway or Graphics products, Version 3.0 or higher.

After that date, upgrades will cost $195.

Avatar Corp., 65 South St., Hopkinton, Mass. 01748; (508) 435-3000. ◻

IMC offers hardware print server

continued from page 33

and to parallel ports at up to 160K bytes, according to the company, fast enough to support the latest generation of high-speed laser printers from Hewlett-Packard Co., for example.

The price of the Ethernet-ready XL-110E and the full 18 ports is $1,595. Units without the Ethernet interface but with configuration and operations software cost $995 for the 10-port unit and $1,295 for the 18-port unit. All are available now.

For more information, contact IMC at 1360 Bordeaux Drive, Sunnyvale, Calif. 94089, or call (408) 744-9004. ◻

Now there's an expert system that turns network troubleshooting into sharpshooting.

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There is a better way.

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OPINIONS

DEREGULATION

BY ED HORRELL

A plea to free the Bells from MFJ restrictions

Judge Harold Greene: If you're reading, pay attention.

You're taking this regulation thing a little too seriously, my good man. I feel compelled to give you a word of advice.

Ease up a little. Take a break. Free the Bells.

By now, you've got to be tired of all the whining from these guys! "Too many restrictions." "We could do a lot of fabulous things if . . ." Well, hell, Judge . . . let them go!

What are you worried about, anyway? Is it users? If so, don't give us another thought. We'd like what could happen!

We'd like the electronic yellow pages and data bases that we could access. The Bells could put some real sizzle in Integrated Services Digital Network-like services if you'd let them. Consider videotex, home shopping, services for the handicapped and elderly, and stuff we haven't even thought about yet. Are you listening?

And while you're at it, Harold, let them get into the equipment manufacturing business once and for all. The commodity market private branch exchange business isn't doing anybody any good, anyway. No application selling anymore. No solutions from the manufacturers. Just "me too-type" systems.

> Get the competition out of the back room and let them fight in an open marketplace.
>
> ▲▲▲

The Bells could come up with equipment designed to fit the needs of the network for a change. But the way it is now, the Bells are just big distributors. Instead of just allowing them to buy the equipment, let 'em buy the company! Then they could solve network problems from end to end without all the finger pointing that's going on now.

And don't be listening to all the stuff about "putting the other guys out of business." The best days for the interconnect manufacturers were when they were competing with AT&T. If they can't move faster and cheaper than the Bells, they shouldn't be around, anyway. Get the competition out of the back room and let them fight it out in an open marketplace, where the users can be the judge.

And if we lose a few companies along the way, so be it. Frankly, Scarlet, nobody gives a magnolia about who goes out of business when services are on the line.

I'm not suggesting that you go away, Harold. We still need an advocate for protection from rate subsidies when you let these guys loose. We've seen evidence where they can be pretty tricky when it comes to covering their losses with profits from other endeavors. So you're real important to the deal, H.G., because we need you as our watchdog to keep the Bells from ringing in too much.

By the way, it's OK to let the states have their say-so in the regulation of local service. It would be too much to ask you to take on those guys as well, and nobody wants that business, anyway. But that's even more reason to let the Bells have a little room. They offer a service that is virtually noncompetitive, but which could be greatly enhanced if you'd allow it. The states can help watch local service rates and do their deal about protecting the basic telephone rates; no complaints to speak of there. You keep the bean counters busy, let the Bells go and make sure the bucks they make in the regulated arena don't find their way over to the nonregulated side.

Think about it, Judge. As they say in the South, "Get out of the way and let the big dogs hunt."

Horrell is president of The Horrell Consulting Firm, Inc. in Memphis, Tenn.

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EDITORIAL

First cheer, then support local-loop competition

Users should cheer, then actively support the Federal Communications Commission's May 9 notice of proposed rule making, which would force major local operating companies to collocate the transmission equipment of alternative access providers.

The FCC's proposal would greatly encourage competition in the local loop.

So far, the FCC's plan embraces only special access, meaning that local carriers just have to connect the private lines carried on other local carriers' fiber. However, the commission is considering extending the requirement to switched access services, which opens the door to competition for plain old telephone service.

These moves could cut the cost of local service and help corporate users find better backup routes for their local links to national nets.

It's important that corporate network users make their views about this plan known as soon as possible. When the FCC announces a notice of proposed rule making, it is really saying it wants to act but won't if the proposal meets strong opposition.

And there is certain to be opposition from local operating companies, some state regulators and, in particular, some consumer groups. Ordinary consumers, especially if they are organized, are likely to have a great deal of clout with the FCC these days.

Opponents are likely to argue against the new policy, saying that it could increase prices for residential users. They fear that alternate access carriers with open access to regional Bell holding company facilities could "cream skim" — in other words, take the most profitable business away from the local carriers.

The cream skimming theory has long been voiced by those in opposition to competition in the local loop. In fact, they argue against the very existence of alternate carriers. Fortunately, this cream skimming theory is just about the only argument opponents have.

But unless the opposition is countered, the FCC might have to delay or water down its proposal. Instead, the FCC's plan should be extended. Users should insist that the FCC require local carriers to allow physical collocation of the equipment of their competitors. Current FCC rules permit carriers to specify virtual collocation, which is not quite as good for backup purposes.

In any case, network users should make their views known on this proposal. By supporting the FCC and pressing for the extension of its plan, they will be helping themselves.

OPINIONS

INTEGRATION

BY JOHN MCQUILLAN

A glimpse of what lies ahead in our video future

Most users today are focused on building computer networks to carry data communications. We are well aware that we build these data networks on top of fundamental transmission and switching systems structured to support voice communications.

In the early days of data communications, all you needed was a modem, which enabled your computer to access the voice network. More recently, we have developed specialized networks, especially local-area networks, that support only data.

Now that data communications technology has matured, many vendors and users are again asking if voice and data networks should be integrated. Public carriers, which take a long-term view, respond with an emphatic "Yes!" They believe they must carry all the traffic presented to them by a broad range of customers.

By contrast, private network carriers have a short-term outlook. During the mid-1980s, this viewpoint led them to believe that the integration of voice and data was cost-effective because of the prevailing tariffs.

More recently, they've concluded that there isn't any fundamental reason to combine the two forms of traffic, so most leading organizations now tend to plan their voice and data nets separately.

Now comes video to add even more complications. It has become clear that we are on the brink of a new stage in video communications.

Video is going to be completely digital in creation, transmission, storage, retrieval, editing and mixing with other information. To paraphrase Gertrude Stein: A bit is a bit is a bit. Video will be just another form of information for our computing systems.

McQuillan is president of McQuillan Consulting in Cambridge, Mass. He assists users and vendors in planning communications systems.

Dozens of companies are now developing chips, expansion boards, workstations, software and other facilities for supporting the integration of computing and video. Yet we don't even agree on terms for all these new developments.

Some people talk about multimedia, but this confusing term doesn't clarify the situation. "Workstation video" is more descriptive, but rather plain. George Gilder, author of *Microcosm,* which describes the impact of the microelectronics revolution on all aspects of business and society, prefers the term "telecomputer."

> It has become clear that we are on the brink of a new stage in video communications.
>
> ▲▲▲

Consider the convergence of the key technologies. The future of broadcast television is digital. The original Japanese proposal for high-definition television appears to be losing out to an all-digital approach backed by AT&T and Zenith Electronics Corp.

This will certainly lead to a transformation in the information and entertainment markets. We have several million miles of fiber in the U.S. already — nearly ten times the amount in Japan.

The next generation of workstations — whether high-powered professional systems such as those offered by Sun Microsystems, Inc. and Silicon Graphics, Inc. or mass-market products from IBM-compatible manufacturers and Apple Computer, Inc. — will be able to display full-motion video in resizable windows.

Such add-on boards are available today for personal computers and Apple Macintoshes for less than $700.

The next release of Macintosh's operating system and Microsoft Corp.'s Windows will support multimedia extensions in order to provide for the creation, storage, retrieval and exchange of multimedia documents — a first step toward video mail. Can video dial tone be far behind?

This has led Nicholas Negroponte, director of the Massachusetts Institute of Technology's Media Laboratory, to suggest that we need a complete technological make-over. Information that is currently transmitted over wires — primarily today's voice communications — needs to move to wireless transport. Information that currently comes to us by wireless means (broadcast video) should move to fiber transmission.

According to Negroponte, telephones should be wireless because you want to reach people where they are, not where their telephones are. A telephone should be something that you carry around, much like your credit cards or your keys.

Video, on the other hand, requires so much bandwidth that it is best supported by the near-limitless capabilities of fiber transmission.

This switchover, which would require completely rebuilding our telecommunications infrastructure, puts the discussion of voice and data integration in a new light. Today's data communications is a forgotten stepchild of the voice network of the past. Because we are in the midst of a transformation toward a wireless voice future, especially with the arrival of personal communications networks, it would be a terrible mistake if we turned tomorrow's data networks into the stepchild of tomorrow's voice networks.

Instead, we should be aligning our data networks with future video nets. In time, the two will be inseparable. ☒

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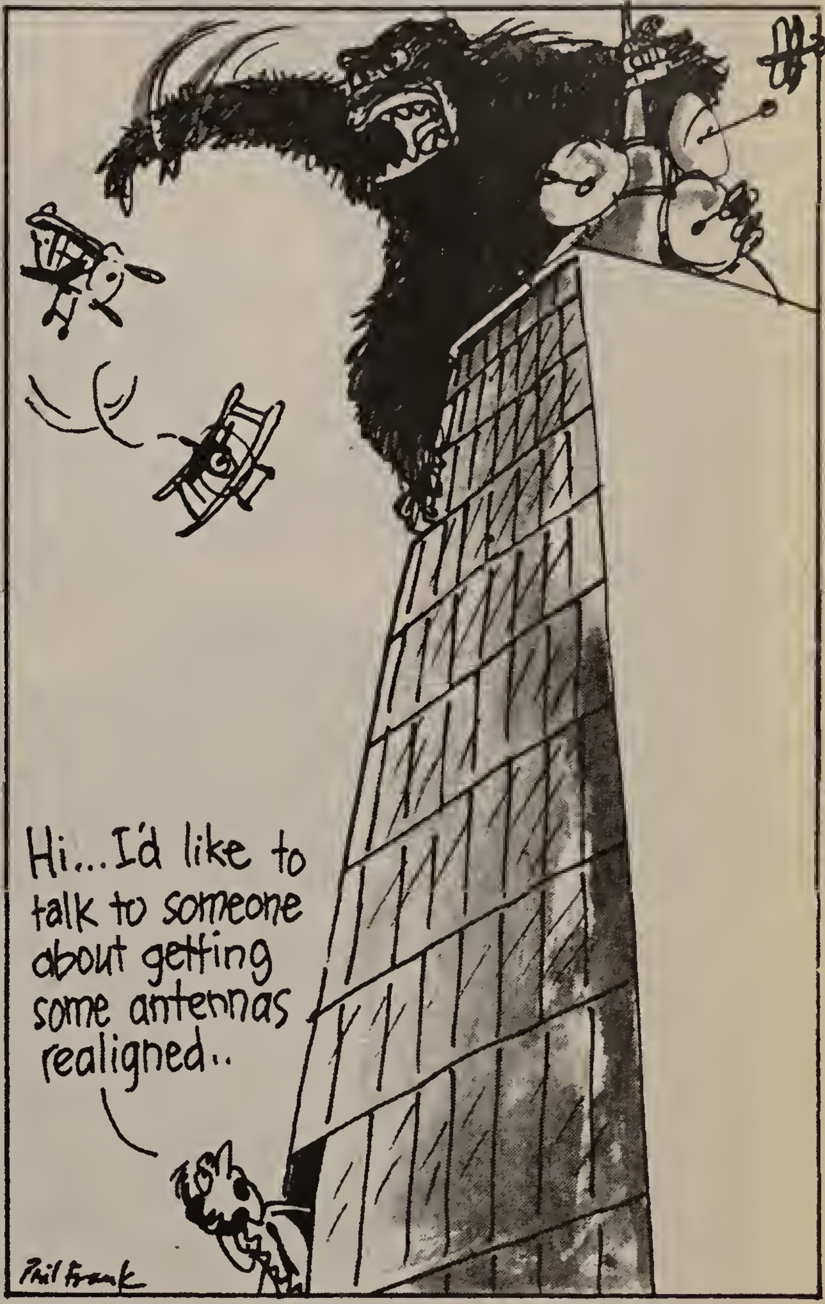
TELETOONS

BY FRANK AND TROISE


Hi...I'd like to talk to someone about getting some antennas realigned..
Phil Frank

LETTERS

US Sprint not an exception

Your recent article on international fiber-optic backup plans ("US Sprint trails AT&T in int'l fiber backup," *NW,* April 22) incorrectly described US Sprint Communications Co.'s global fiber-optic capacity. Contrary to your report — and especially the headline — US Sprint is *not* an exception in relying on satellite as a backup for its fiber-optic cables. As the article notes, nearly all international fiber systems do so.

The article compared AT&T's future plans with US Sprint's current satellite backup circuits, leaving the incorrect impression on readers that US Sprint now trails the competition in international fiber redundancy.

Most cable construction projects are owned by a consortium of U.S. and foreign carriers, regardless of who the initial developers were. Consequently, US Sprint owns or plans to own significant capacity in most fiber-optic cables worldwide, including those in both the Atlantic and Pacific oceans mentioned in your article. AT&T owns capacity only in the Private Trans-Atlantic Telecommunications cable and North Pacific Cable.

Michael McCarthy
Senior vice-president
US Sprint Communications Co.
Overland Park, Kan.

Author's reply:

The article accurately described Private Trans-Atlantic Telecommunications and North Pacific Cable as US Sprint's primary international fiber links, not its only fiber links. As a US Sprint spokesman acknowledged, the carrier is plan-

(continued on page 54)

Network World *welcomes letters from its readers.*

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C. Please Answer ALL Questions, Sign & Date the Form.

1 Industry: (check one only)

01. ☐ Manufacturers (other than computer/communications)
02. ☐ Finance/Banking
03. ☐ Insurance
04. ☐ Real Estate
05. ☐ Healthcare Services
06. ☐ Legal
07. ☐ Hospitality
08. ☐ Retail/Wholesale Trade
09. ☐ Transportation
10. ☐ Utilities
11. ☐ Education
12. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
13. ☐ Government State/Local
14. ☐ Government Federal
15. ☐ Military
16. ☐ Aerospace
17. ☐ Consultants (independent)
18. ☐ Carriers
19. ☐ Interconnects
20. ☐ Manufacturers (Computer/Communications)
21. ☐ VAR/VAD/Systems House
22. ☐ Distributor, Computer Related
23. ☐ Distributor, Communications Related
24. ☐ Other ____________

2 Job function: (check one only)

1. ☐ Networking Management (Responsible for both voice & data)
2. ☐ MIS Management (VP, Dir., Department Head)
3. ☐ Corporate Management (Chairman, President, Owner, General Manager, CEO, CIO, VP)
4. ☐ Data Communications Management (Responsible for data only)
5. ☐ Telecommunications Management (Responsible for voice only)
6. ☐ Financial Management
7. ☐ Engineering Management
8. ☐ Consultant (Independent)
9. ☐ Other ____________

3 What is the scope of your involvement in purchase decisions for Network/Communications products + services? (check one only)

1. ☐ Enterprise Wide (Organization/Subsidiary/Division)
2. ☐ Multi Enterprise (Consultants)
3. ☐ Department Wide

4 What is the total number of sites for which you have purchase influence?

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1

5 Your primary responsibility: (check one only)

1. ☐ Both Data + Voice
2. ☐ Data Networking Only
3. ☐ Voice Networking Only
4. ☐ None

6 Which transmission media do you use in your network: (check all that apply)

Public:
01. ☐ Switched-Based (DDD, Wats, Megacom, etc.)
02. ☐ Leased Line (not including T-1)
03. ☐ T-1
04. ☐ Fractional T-1
05. ☐ T-3/SONET
06. ☐ Broadband
07. ☐ ISDN

Private:
08. ☐ Satellite
09. ☐ Microwave
10. ☐ Fiber Optic

7 Is your network: (check all that apply)

LOCAL AREA NETWORK
1. ☐ Local (within building)
2. ☐ Local (in a campus environment)

WIDE AREA NETWORKS
3. ☐ International
4. ☐ National
5. ☐ Regional (several states)
6. ☐ Metropolitan

8 What is your network architecture? (check all that apply)

1. ☐ SNA
2. ☐ DECNET
3. ☐ OSI
4. ☐ GOSIP
5. ☐ MAP/TOP
6. ☐ TCP/IP
7. ☐ DCA (UNISYS)
8. ☐ OTHER ____________

9 What Is your LAN Operating System? (check all that apply)

01. ☐ 3COM (3+, 3+open)
02. ☐ LOCAL TALK (APPLETALK)
03. ☐ BANYAN (VINES)
04. ☐ DCA (IRMALAN)
05. ☐ IBM (LAN Server)
06. ☐ IBM (PC LAN PROGRAM)
07. ☐ MICROSOFT (LAN MANAGER)
08. ☐ UNGERMAN BASS (NET/1)
09. ☐ NOVELL (NETWARE)
10. ☐ TOPS
11. ☐ PROTEON (PRONET)
12. ☐ OTHER ____________

10 What is your LAN environment? (check all that apply)

1. ☐ 4M TOKEN RING
2. ☐ 16M TOKEN RING
3. ☐ ARCNET
4. ☐ ETHERNET
5. ☐ STARLAN
6. ☐ FDDI
7. ☐ LOCALTALK
8. ☐ 10BASET
9. ☐ OTHER ______

11 Which operating systems do you utilize? (check all that apply)

1. ☐ IBM DOS (VSE)
2. ☐ UNIX
3. ☐ OS/2
4. ☐ OS/2 Extended Edition
5. ☐ MVS
6. ☐ VM
7. ☐ VMS
8. ☐ XENIX
9. ☐ PICK
0. ☐ OTHER ______

12 Please indicate by vendor the number of mainframes/minicomputers installed in your network.

VENDOR	MAINFRAMES A	MINIS B
01. DEC		
02. IBM		
03. AMDAHL		
04. AT&T		
05. BULL HN IS		
06. NCR		
07. DATA GENERAL		
08. WANG		
09. HEWLETT PACKARD		
10. PRIME		
11. TANDEM		
12. UNISYS		
13. CONTROL DATA		
14. OTHER		

13 Please indicate by vendor the number of microcomputers/workstations:

A. Presently Installed in your network.

B. The approximate quantity you plan to install in the next 12 months.

MICROCOMPUTER/ WORKSTATION/ VENDOR	PRESENTLY INSTALLED A	PLAN TO INSTALL NEXT 12 MONTHS B
01. PCs based on 80286 chip		
02. PCs based on 80386 chip		
03. PCs based on 80486 chip		
04. 8086/8088		
05. Macintosh		
06. RISC-based workstations		
07. UNIX-based workstations		

14 What is your planned PC standard? (check all that apply)

1. ☐ EISA
2. ☐ MCA
3. ☐ NUBUS (MACINTOSH)

15 For which areas outside of the U.S. do you have purchasing influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East

16 Check ALL that apply in columns A and B

A) I am presently involved in the purchase process for the following products/services:

B) I plan to purchase the following products/services in the next 12 months:

Presently Involved	Plan to Purchase	
A	B	LOCAL AREA NETWORKS:
01. ☐	☐	Local Area Networks
02. ☐	☐	LAN Servers
03. ☐	☐	LAN Services
04. ☐	☐	Cables, Connectors, Baluns
05. ☐	☐	Bridges, Routers, Gateways
06. ☐	☐	UPS
07. ☐	☐	LAN Storage Devices
A	B	COMPUTERS/PERIPHERALS:
08. ☐	☐	Micros
09. ☐	☐	Minis
10. ☐	☐	Mainframes
11. ☐	☐	Front End Processors
12. ☐	☐	Terminals
13. ☐	☐	Laptops
14. ☐	☐	Printers
15. ☐	☐	Work Stations
16. ☐	☐	Cluster Controllers

(continued on next column)

Presently Involved	Plan to Purchase	
A	B	SOFTWARE:
17. ☐	☐	Network Management
18. ☐	☐	Micro to Mainframe
19. ☐	☐	Network Security
20. ☐	☐	Call Accounting
21. ☐	☐	Distributed DBMS
22. ☐	☐	Communications Software
23. ☐	☐	Applications Software
24. ☐	☐	Network Operating Systems Software
25. ☐	☐	EDI Software
26. ☐	☐	E-Mail Software
A	B	DATA COMMUNICATIONS:
27. ☐	☐	Modems (over 9.6kbps)
28. ☐	☐	Modems (under 9.6kbps)
29. ☐	☐	T-1 Multiplexers
30. ☐	☐	T-3 Multiplexers
31. ☐	☐	Fractional T-1 Multiplexers
32. ☐	☐	Data Switches
33. ☐	☐	Matrix Switches
34. ☐	☐	Packet Switches
35. ☐	☐	Protocol Converters
36. ☐	☐	Network Management Systems
37. ☐	☐	Terminal Emulation Boards
38. ☐	☐	Facsimile Machines
39. ☐	☐	Diagnostic Test Equipment
40. ☐	☐	DSU/CSU
41. ☐	☐	Data Security
42. ☐	☐	Data Compression Equipment
43. ☐	☐	Network Adapter Boards
44. ☐	☐	Microwave
45. ☐	☐	Messaging Software
A	B	TELECOMMUNICATIONS:
46. ☐	☐	PBXs (over 1000 lines)
47. ☐	☐	PBXs (200 - 1000 lines)
48. ☐	☐	PBXs (under 200 lines)
49. ☐	☐	Key Systems
50. ☐	☐	Automatic Call Distributors
51. ☐	☐	Voice Messaging Systems
52. ☐	☐	Video Teleconferencing Systems
A	B	SERVICES:
53. ☐	☐	Switched Voice
54. ☐	☐	Dedicated Leased Line
55. ☐	☐	T-1
56. ☐	☐	T-3
57. ☐	☐	Digital Data
58. ☐	☐	Packet Switched
59. ☐	☐	Centrex
60. ☐	☐	Central Office Lan
61. ☐	☐	Satellite
62. ☐	☐	On-Line Information
63. ☐	☐	ISDN
64. ☐	☐	EMail
65. ☐	☐	VSAT

17 Estimated value of networking equipment and services:

A: Which you helped specify, recommend or approve in the last 12 months?

B: Which you plan to help specify, recommend or approve in the next 12 months?

A	B
1 ☐	☐ $100 million and over
2 ☐	☐ $50 - $99.9 mill
3 ☐	☐ $25 - $49.9 mill
4 ☐	☐ $20 - $24.9 mill.
5 ☐	☐ $10 - $19.9 mill.
6 ☐	☐ $5 - $9.9 mill.
7 ☐	☐ $1 - $4.9 mill.
8 ☐	☐ $500,000 - $999,999
9 ☐	☐ Under $500,000

18 Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ over $10 billion
2. ☐ $1 to $9.9 bill.
3. ☐ $500 to $1 bill.
4. ☐ $100 to $499.9 mill.
5. ☐ $50 to $99.9 mill.
6. ☐ $10 to $49.9 mill.
7. ☐ $5 to 9.9 mill.
8. ☐ under $5 mill.

19 Estimated number of employees for your entire corporation:

1. ☐ over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ under 500

20 Which of the following ISDN products do you plan to purchase in the next 12 months? (check all that apply)

1. ☐ Basic Rate Interface Terminal Adapters
2. ☐ Primary Rate Interface Equipment
3. ☐ Voice/Data terminals
4. ☐ Voice-only terminals
5. ☐ Data-only terminals

21 From which of the following vendors will you consider buying your PBX/Central Office Switch? (check all that apply)

A PBX	B COS	
A ☐	☐	AT&T
B ☐	☐	ALCATEL
C ☐	☐	ERICSSON
D ☐	☐	FUJITSU
E ☐		HARRIS
F ☐		HITACHI
G ☐		ROLM
H ☐		INTECOM
I ☐		MEMOREX TELEX
J ☐		MITEL
K ☐	☐	NEC
L ☐	☐	NORTHERN TELECOM
M ☐		SAMSUNG
N ☐	☐	SIEMENS
O ☐		STROMBERG-CARLSON
P ☐		TOSHIBA
Q ☐	☐	OTHER ____________

NETWORK WORLD
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An IDG Publication

91NN

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Networks that go virtually anywhere

CONTINUED FROM PAGE 1

improvements in virtual nets are expected to accelerate. Carriers have major plans for 1992, including upgrades to the billing and provisioning processes, feature capabilities and international coverage of virtual networks.

These updates, however, will focus on existing services, exploring the latest happenings in the virtual network offerings of AT&T, MCI Communications Corp. and US Sprint.

Because virtual network services are software-defined, carri-

(continued on page 49)

Briere is president of TeleChoice, Inc., a Montclair, N.J., telecommunications consultancy specializing in long-distance service analysis and network design. He can be reached at (201) 746-0200.

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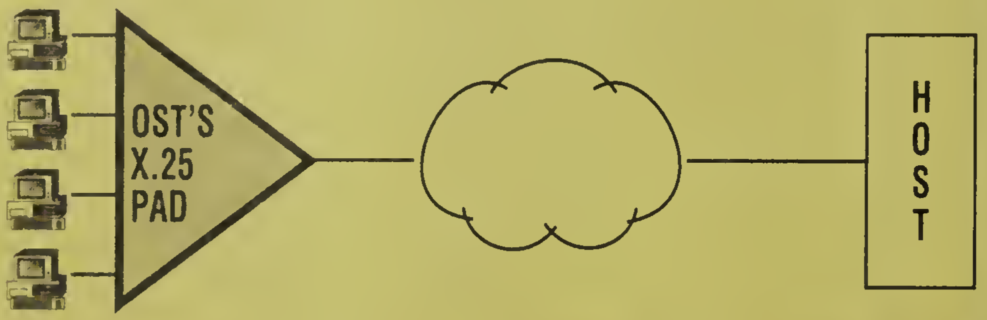

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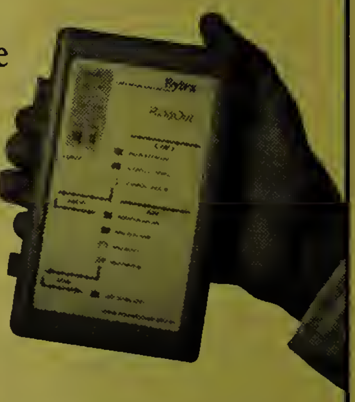

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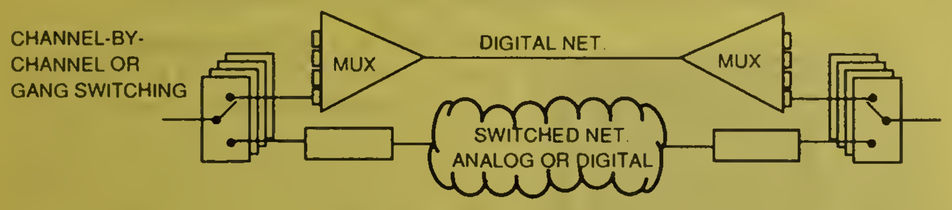
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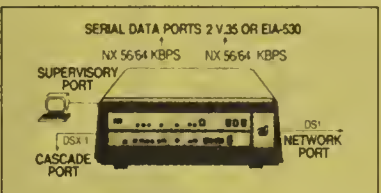

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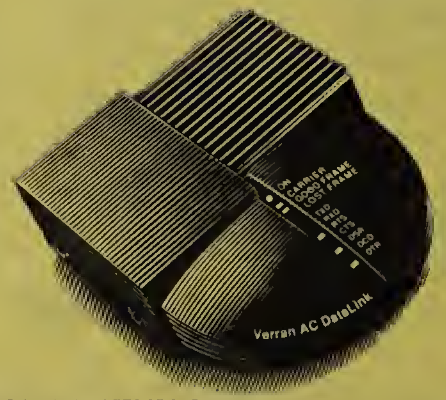

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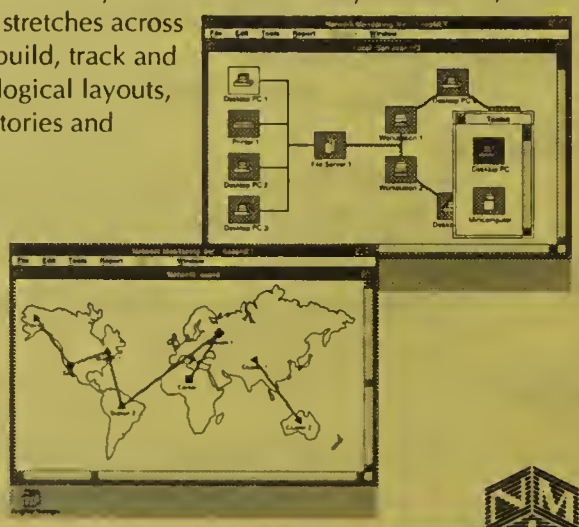

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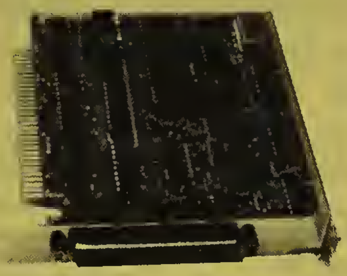

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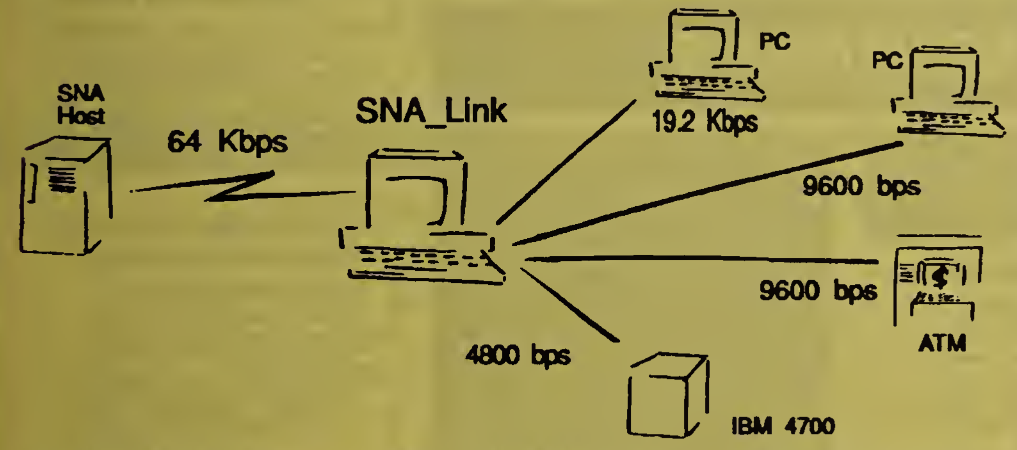

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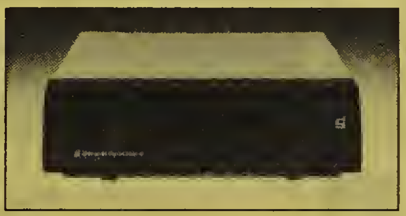

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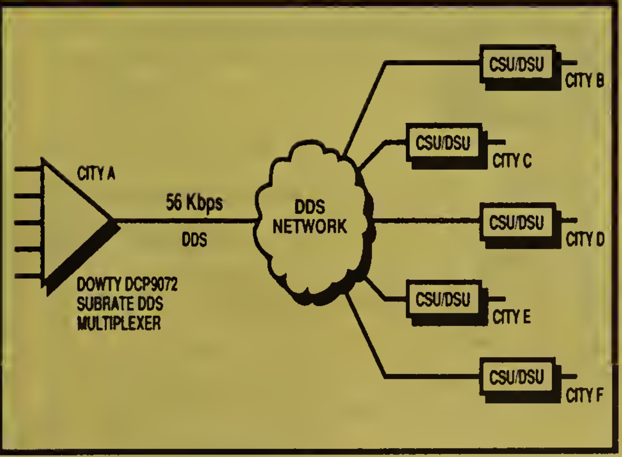

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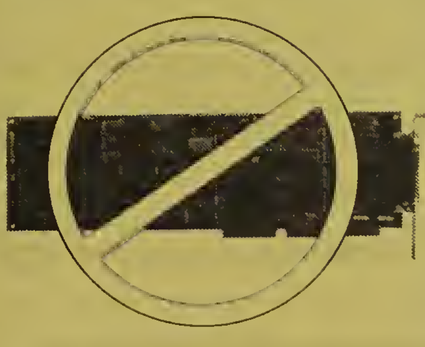

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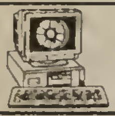

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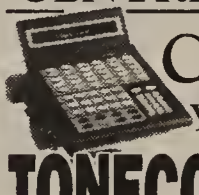

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June 24

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Videoconferencing

July 8

Buyer's Guide: T-1/T-3 multiplexers
Special: Harvey

July 15

1. Moving to OS/2: How, when, why?
2. Network management update

Show Distribution:
ComNet West; Net. Computing Forum
Special: Lead Service

July 22

LAN management update

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Technology Trends:
Packet networks of the future

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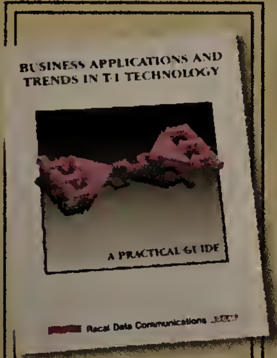

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(continued from page 39)

ers can add new features with relative ease, and each carrier is using these features to differentiate its services from those of other providers.

AT&T, for instance, is working on a new feature called Inter-Cellular Access to SDN. The carrier is negotiating with a number of local cellular carriers to allow its customers to have cellular access to their Software-Defined Network from areas outside their home cellular area.

Rather than asking for new features, however, many users are requesting more powerful versions of existing functions.

"Given that you have relative feature parity and relative price parity [among carriers], it comes down to how well the carrier allows customers to manage their features," according to Allan Palmer, MCI's Vnet product manager.

Customized elegance

"Users want features to be more elegant and more 'customizable,' " US Sprint's Canipe says. "There is no feature war going on. What one carrier creates [in terms of features], everyone can replicate."

Thus, users will see more functionality from existing features. For instance, MCI earlier this month simplified the process that allows customers to place multiple calls using their Vnet virtual network service cards.

For a while now, MCI Vnet users have been able to hit the "pound" sign after a call to place another call using the same authorization code.

However, while MCI's network requires a signal that lasts 400 msec, some equipment — notably, AT&T phones — sends only a 50 msec pulse, which the MCI network ignores. With the new upgrade, the network now supports pound-sign reorigination from all types of phones.

Service integration continues to be a strong theme among the carriers.

US Sprint, for example, is incorporating some of its other services into its Virtual Private Network (VPN) product. Last year, US Sprint integrated its videoconferencing service, the Meeting Channel, into VPN through a transparent gateway, enabling all its customers to dial an on-net number to access the Meeting Channel system in Atlanta. Customers are then charged VPN on-net-to-on-net rates for the transport portion of the videoconference.

US Sprint is also pursuing this same type of integration for its data services, such as SprintFax, SprintNet and SprintMail, and audio conferencing and messaging. The carrier is also working toward providing customers with transparent access to the network, though not just through Integrated Services Digital Network, Canipe says.

In June, AT&T will initiate the first phase of a two-year cutover that will merge its provisioning and billing processes end-to-end. This revision should enable AT&T to increase efficiency, improve throughput and increase flexibility.

In the past, AT&T has had provisioning problems due to the various systems and paperwork involved. At times, new customer installations have been bogged down for months.

For example, at switched access sites, a new installation request form had to be physically routed through seven processes, and a mistake or problem at any point would send the order back to the beginning for reprocessing.

With the new changes, AT&T hopes to decrease to less than 30 days the time it takes to establish service with an SDN customer.

The provisioning and billing improvements include an internal interface that will allow AT&T to enter new location and customer information into a new mechanized system. That capability will lay the groundwork to drive the provisioning and billing processes from only one platform in the future.

In addition, AT&T is designing some new customer interfaces into its SDN system. As part of the June architectural changes, AT&T will offer its employees electronic access to customer service record (CSR) information, in addition to the call detail and invoice information already available.

Many local exchange carriers offer CSR reports that detail every charge on a customer's account. However, many of these are extremely difficult to read because of constant references to universal service order codes.

AT&T hopes to eventually offer users similar access to the AT&T SDN system but in a more readable manner, says Glenn Starr, AT&T's product manager for SDN. AT&T's goal is to have the product on-line for customers by early 1992.

In addition, AT&T is finalizing market research designed to determine how to revise its SDN bill format to serve users best. Indeed, bills have been cryptic at times.

For example, one AT&T SDN bill listed a cost item as "AJ1AA VPC ACC COORD FNCT." This is an access coordination fee, which simply could have been written in English.

MCI is also revising its billing service. The carrier just launched the latest version of Location Level Billing, which offers enhancements such as:

- Nine levels of invoicing and reporting that correspond to an organization's structure for an unlimited number of locations.
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- Alternate invoicing and reporting addresses for customers.
- Report titles that can be customized to match a user's organizational structure.

US Sprint is now rolling out the second portion of its Invoice Processing System. Last year, the carrier completed implementation of FONManager, the low-end billing and reporting modules. However, the product modules in the mid-range to high end, marketed under the name Management Billing Advantage, have been delayed in development and are now due later this year. This new billing and reporting system will provide US Sprint VPN users with more than 20 reports on their network usage.

When launched, the Invoice Processing System's reporting and billing capabilities will make it arguably one of the most functional systems on the market. However, exact cutover availability dates for VPN customers are not yet available.

Pricing

Recently, virtual network pricing has been creeping upward. AT&T, MCI and US Sprint each raised prices by about 2%.

The carriers want to move away from generic pricing levels and toward higher margin pricing. "As we invest more in feature functions and enhancements, it will cost more to provide [our VPN service]. [The] cost of service might reflect that," MCI's Palmer says.

Overall, users can expect a 5% to 6% increase in rates this year, according to the Big Three's product managers.

Recently, AT&T instituted several SDN price changes, many of which are designed to prompt migration to its new Distributed Network Services (DNS) product, which was originally designed for resellers.

Specifically, AT&T increased its local exchange and off-net rates, hitting the SDN tariff areas that were most attractive to resellers.

DNS uses the same network architecture that drives AT&T's standard long-distance services. It uses the 10288 access code instead of the SDN 10732 code, thus allowing the carrier to take advantage of the well-established provisioning process for regular long-distance service. This enables AT&T to slash customer installation periods from the current 30 to 40 days to about seven days.

New card functionality

Last month, MCI deployed its Vnet Card-Global Reach program, which launches advanced services for its Vnet card. MCI's new program enables Vnet cardholders to access their Vnet from 26 countries overseas.

Importantly, MCI allows users to access their private network dialing plans from overseas — which AT&T and US Sprint virtual network users currently cannot do.

US Sprint is also working on enhancing its card product. Later this year, US Sprint is expected to launch automated message delivery and information services for its FONCard product line.

Because the VPN FONCard uses the same architecture as the regular FONCard product, VPN users will have access to the same message-forwarding capabilities and news and weather data as regular FONCard users.

New providers

The virtual network market still has room for more players. AT&T, MCI and US Sprint have largely targeted their virtual network services to upper tier users — those with more than $25,000 in monthly usage charges. Therefore, much of the future growth is expected to come in the second tier of the market — users with more than $10,000 but less than $50,000 in monthly usage fees.

Carriers such as Advanced Telecommunications Corp. (ATC) and Metromedia Communications Corp. are readying virtual network products for launch later this year or early 1992. Metromedia hopes to take advantage of its established billing systems to woo customers; ATC already has all the elements for its offering in place and is working with EDS Communications Co. on enhanced billing for the service.

Cable & Wireless Communications, Inc. also is developing a domestic virtual network product — a process that may be hastened by its recent acquisition of TRT/FTC Communications, Inc.,

(continued on page 52)

Carrier virtual network availability overseas

	Interconnection date		
PTT	AT&T	MCI Communications Corp.	US Sprint Communications Co.
Australia - OTC, Ltd.	Service available	July 1991	Fourth quarter, 1991 (bilateral)
Belgium - Regie des Telegraphes et Telephones	September 1991	July 1991	November 1991 (bilateral)
Canada - Telecom Canada	Late 1991 to early 1992	Late 1991 to early 1992	Late 1991 to early 1992
Canada - Unitel Communications, Inc.	Service available	September 1991	Service available (bilateral); fourth quarter, 1991 (multilateral)
Caribbean - Cable & Wireless, Ltd.	1993 to 1994	1993 to 1994	1993
France - France Telecom	Service available	September 1991	Second half, 1991 (bilateral)
Hong Kong - Hong Kong Telecom International, Ltd.	Fourth quarter, 1991	Fourth quarter, 1991	Service available (bilateral); first quarter, 1991 (multilateral)
Ireland - Telecom Eireann	1991 to 1992	1991 to 1992	Second half, 1991
Italy - ItalCable	Second or third quarter, 1991	Fourth quarter, 1991	1992
Japan - International Digital Communications, Inc.	1991 to 1992	1991 to 1992	Fourth quarter, 1991 to first quarter, 1992 (multilateral)
Japan - International Telecom Japan, Inc.	1992	1992	1992
Japan - Kokusai Denshin Denwa Company, Ltd.	Service announced - pending government approval	Third quarter, 1991	1992
Netherlands - PTT Telecom Netherlands	Third quarter, 1991	Third quarter, 1991	Third quarter, 1991 (multilateral)
Singapore - Singapore Telecom	Third quarter, 1991	Third quarter, 1991	Third quarter, 1991
U.K. - British Telecom	Service available	Service available	Second half, 1991 (bilateral)
U.K. - Mercury Communications, Ltd.	Late second quarter to early third quarter, 1991	Fourth quarter, 1991	Service available (bilateral); first quarter, 1991 (multilateral)

GRAPHIC BY SUSAN SLATER

SOURCE: *TELECHOICE, INC.'S REPORT ON INTERNATIONAL VPNs*

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IN A NUTSHELL

Sizing up SMDS

And boiling down the details of the technology behind this high-speed packet service.

The concept of Switched Multimegabit Data Service (SMDS) is fairly well understood — it's a high-speed public packet service that will be useful mainly for interconnecting users' local-area networks.

But how many potential users understand the technology on which SMDS is based? For example, is it connection-oriented or connectionless? Does it require an access algorithm? And how does it differ from frame relay and broadband Integrated Services Digital Networks?

It's important to grasp this technology now because SMDS is coming fast. Several regional Bell holding companies have SMDS trials under way. Bell Atlantic Corp. is expected to offer the first tariffed SMDS service later this year.

The fundamentals

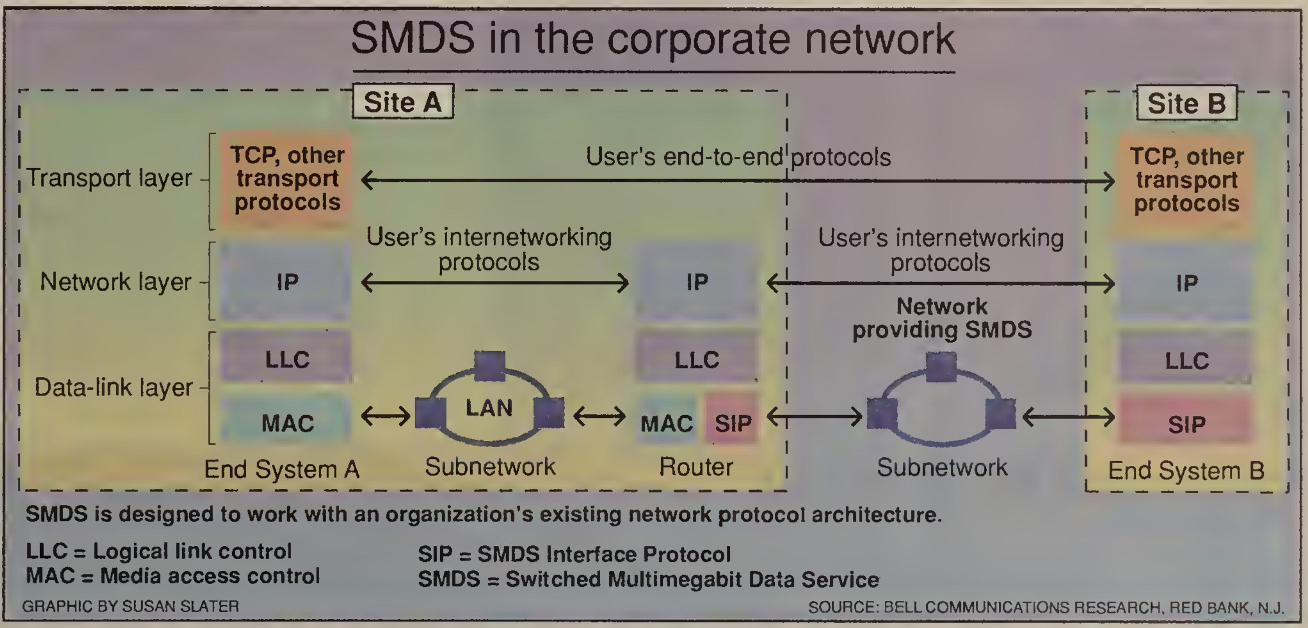
The original intent behind SMDS, which the IEEE 802.6 standards committee began designing in 1982, was to create a high-speed public LAN. The scope of SMDS has since expanded, but it still adheres to underlying LAN basics.

Like Ethernet LANs, SMDS was originally designed to run over a bus backbone. In this case, the concept called for a looped bus topology, which looks somewhat like a ring with an opening in it and is designed to give every packet an alternate path if the original path is severed.

For cost reasons, the telephone companies are not deploying the looped bus. So in most cases, only one two-wire circuit is likely to be set up between an SMDS gateway on the customer site and the telephone switch. The looped bus can be used in campus networks, however.

Like any LAN, SMDS requires an access technique to prevent overlapping transmissions. But instead of using carrier-sense multiple access with collision detection or token passing, SMDS relies on a distributed reservation scheme with each node counting the requests for access of the nodes ahead of it.

An SMDS gateway is created by installing a board in a minicomputer or other processor. The gateway could also be a standalone device that functions as a router, reading the packets of any LAN on the customer's premises and routing according to their protocols. SMDS has extensive address capabilities, but it cannot be considered a routing service since it does not handle packets at Layer 3. Thus, SMDS is a multiport bridging service.



SMDS in the corporate network

SMDS is designed to work with an organization's existing network protocol architecture.

LLC = Logical link control
MAC = Media access control
SIP = SMDS Interface Protocol
SMDS = Switched Multimegabit Data Service

GRAPHIC BY SUSAN SLATER

SOURCE: BELL COMMUNICATIONS RESEARCH, RED BANK, N.J.

Like all LAN protocols, SMDS is connectionless, which means that it does not set up the chained-packet sequence that has become known as a virtual circuit. Its packets are datagrams, meaning that each one is addressed and switched independently without the prior establishment of a network connection or virtual call, as in X.25.

However, the SMDS packet header contains blank spaces into which the telephone companies can insert code for creating a virtual circuit. Thus, telephone company SMDS packet switches must deal with multiple SMDS connections. Experts believe that these switches are likely to use virtual circuits to transmit the data.

Big packets

Each SMDS packet can contain as many as 9,188 octets of user information. This allows SMDS to encapsulate entire packets from most LANs, including Ethernets, most token rings (except for the 16M bit/sec token ring, which can go to 16,000 octets) and all 100M bit/sec Fiber Distributed Data Interface networks.

The lower layers of the SMDS interface protocol also segment the packets into slots of uniform length (53 octets per slot, of which 44 octets can be user information). A form of built-in error protection, a 10-bit cyclic redundancy check (CRC), exists at this level. SMDS also has an optional 32-bit CRC that covers the full packet.

Current plans for the service call for transmissions at the 1.544M bit/sec T-1 rate and 45M bit/sec T-3 rate. In the first case, the physical medium may be either twisted pair or fiber. In the second, single-mode fiber is required for any great distance.

Although the current top speed of SMDS is 45M bit/sec, the 802.6 committee is working on SMDS transmissions at speeds up to 155M bit/sec while European standards committees are working on speeds up to 622M bit/sec, says James Mollenauer, 802.6 committee chairman and president of Technical Strategy Associates, a consulting firm in Newton, Mass.

Because SMDS is a service and not just a technology, the Bell Communications Research specification provides for certain standard service features. One feature, says Lawrence Lange, a member of the SMDS technical staff at Bellcore, is source address validation, which is designed to ensure the security of customers' data.

After a data unit enters the network, its source address is checked to ascertain that it is legitimately assigned to the subscriber network interface from which it originated. If the two addresses don't match up, the packet will not be delivered.

Another feature is called destination address screening. It allows the network to screen each data unit entering the net to ensure that it is going to a valid recipient.

Both forms of address screening allow users to create logical private networks by allowing data transfers only between approved sites.

Some experts believe that SMDS will migrate to the broadband ISDN standard in the late 1990s, while others feel that the 802.6 technology will serve as a front end for broadband ISDN. In any case, a number of high-speed networking options are on the horizon. Of these, SMDS may be useful for maintaining LAN connection, provided that carriers offer it at an attractive price. ◻

Haber is a Boston-based free-lance writer who specializes in computers and communications.

By LYNN HABER

(continued from page 49)

which already has an international virtual network servicing the U.K.

Global net exploding

Perhaps the area of greatest growth for virtual network services is in the international market. According to a recent report, more than 15 carriers worldwide will have operational virtual network services by year end. This number is expected to climb to 25 by the end of 1992, and by 1993, at least 35 carriers worldwide are expected to have operational virtual network services, with interconnection among these services reaching approximately 70%. (The chart on page 49 depicts the global availability of virtual network services of AT&T, MCI and US Sprint.)

AT&T is pursuing a global SDN strategy designed to interconnect with as many non-U.S. carriers as possible. Product managers at AT&T predict that by year end, the carrier will have service available to more than 15 countries.

This service is limited largely to simple seven-digit dialing capabilities — a far cry from the feature-rich U.S. networks. However, AT&T does offer the lowest prices for virtual network service between the U.S. and the U.K. ("Int'l virtual network rates due to change," *NW,* Dec. 17, 1990).

MCI's Vnet International, through its connection with British Telecom's International FeatureNet, offers a great deal more functionality but at more expensive rates. However, this may soon change; pricing by all the carriers is in a state of flux.

The major focus of all the carriers' virtual network services will be on offering the basic features of a private network, notably on-net dialing plans. AT&T's initial offering to foreign countries provides simple seven-digit dialing.

MCI is attempting to offer customers something more than that in its initial implementation of Vnet International, which has slowed the product's deployment. The carrier has interconnected with British Telecom's FeatureNet service and has announced four other similar connections for this year. MCI expects to have links to seven or eight countries by year end.

US Sprint is working with Cable & Wireless and several international carriers (under the Global FON alliance name) to develop a set of common features under a single product structure, Global VPN (GVPN). The service is just now getting under way after a six-month delay due to switch problems.

For users interested in feature-rich networks, the wait could be long, depending on the carrier selected. Finding commonality among these different features can be difficult without some type of international standard.

For instance, a user wanting to implement global authorization codes will find that AT&T offers three- to 12-digit codes, MCI offers one to seven digits, US Sprint has one to nine digits, British Telecom offers 10 digits, Mercury Communications, Ltd. has one to nine digits and Australia's OTC, Ltd. offers three digits. The advantages of a standardized offering are clear: GVPN, for instance, has standardized on one to seven digits for account codes.

The focus of all the carriers' virtual network services will be on offering the basic features of a private network.

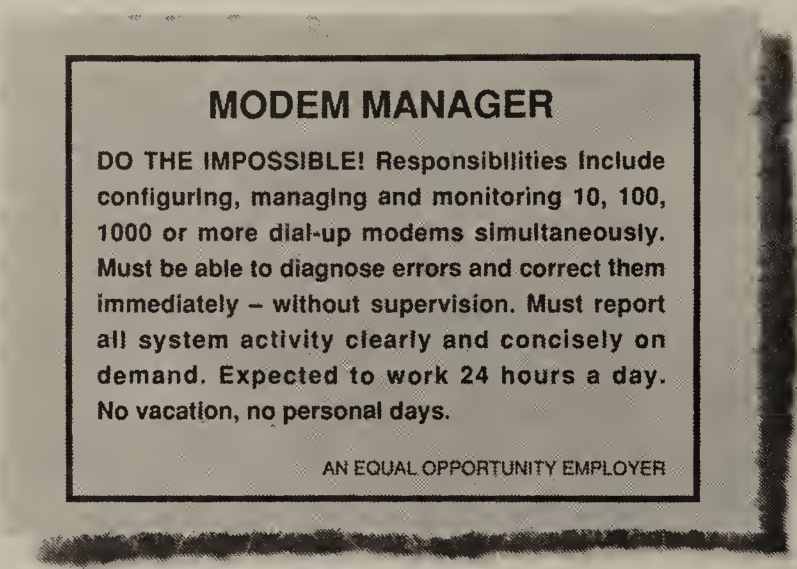
▲▲▲

But not all features will be available in all countries: Users have varied requirements, depending on where they're located. Most post, telegraph and telephone administrations, for instance, already have some type of calling card product that allows users to make telephone calls and charge them to the customer's account. However, for now, it seems doubtful that the PTTs will offer VPN card service; the general feeling among the PTTs is that one card product is sufficient at this time.

Given the pressure to offer services to multinational firms, most countries are developing a basic level of international interconnection before launching a domestic VPN service. Domestic VPN services are expected to lag 12 to 24 months behind international versions.

During the next 12 to 18 months, users can expect to see the major telecommunications carriers — AT&T, MCI, US Sprint, British Telecom, Cable & Wireless and France Telecom — vying to offer transit virtual networking services. Their target market is the smaller carriers that want to offer international connectivity but do not have the traffic to warrant the required dedicated facilities to worldwide points. Thus, by 1992, transit services may enable even the newest virtual networks to offer service to global virtual networks worldwide.

Price will remain the primary motivation for users in the international realm. Foreign carriers have been lowering prices for many outbound services, and virtual network rates, where they exist, will also fall. Certainly, the trend toward lower international rates will affect the new global virtual network service prices as they are created. ◘



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Notes chief details offering

continued from page 26

ments, forms, reports and ideas. These items are inherently looser and work differently than numbers that are used repetitively and tend to be very rigid, structured and predictable. In the case of documents, it's a more subjective situation, so we handle some structure if it is appropriate and [handle] the lack of structure if that's appropriate, too.

So Notes uses preindexed views for selecting and sorting information. In the case of Notes, these views are prearranged so that all the user has to do is select off a menu; there's no query language to know. A view then is like a live report.

What about the acquisition of cc:Mail, Inc.? Are you going to have it work in conjunction with Notes?

We're very excited about it because we see a lot of opportunity for the products to work well together. Customers that have a mixed environment consisting of cc:Mail and different types of operating systems and computers can reach the entire enterprise, which Notes can't do yet because it requires Windows or Presentation Manager. Also, some customers see Notes as solving some of their needs in a particular group or application. But cc:Mail would be a system to everybody, and Notes would be used only in certain areas.

Do you plan to merge cc:Mail into the E-mail component of Notes?

It's not that simple because Notes mail is fairly imbedded, but that's one thing we're looking at. There are some near-term integration things we're doing right away. We already had a gateway, but we are enhancing it to encompass more data types and enable it to run on the Notes server.

The next step is directory synchronization. Since many customers see themselves in a mixed environment for a long time, there is a real need to have synchronized directories so changes in either Notes or cc:Mail are reflected for users of both systems. In terms of near-term integration, we are planning to add some administration tools, additional documentation and training.

Over the longer term, we'd like to merge the API so you could write a mail-enabled application that would work with either cc:Mail or Notes. We also plan to merge the directories into a single directory. There's a number of things we can do to leverage our development efforts; we see development of a communications product line out of this that will be very strong.

According to some research firms, Notes brought in about $6 million in revenue last year and it will bring in three times more than that this year. Is that correct?

Those numbers aren't quite right, but they're in the right neighborhood. We haven't announced the actual numbers, but we are planning for some large growth this year — something in the range of tripling. One [thing] that has contributed to our growth this year has been opening up the channel a bit more.

Would you say one of the things hindering the acceptance of Notes is the lack of true enterprisewide nets?

To some degree. To install Notes, most of our customers have had to do something like upgrade computers and software or deploy networks more quickly. Certainly, they have had to buy server hardware.

What networks and operating systems do you support?

We run on NETBIOS for Novell, IBM, 3Com [Corp.] and Microsoft networks. In the case of Banyan [Systems, Inc.], we wanted to have access to all the wide-area networking capabilities, so we decided to do a sockets driver, which allows us to be a node on the net. One of the reasons companies adopted Banyan for their large networks is because of the seamless integration of all the LANs. So for Banyan, we benefit from all the wide-area networking capabilities. We're even planning on doing a directory synchronization with StreetTalk; that makes sense to do.

Notes can provide that layer that enables people to work together more effectively.

▲▲▲

What about customization for NetWare? Isn't NETBIOS limited in terms of internetworking?

Somewhat, but not really in practical ways. People don't have the enterprisewide networks with NetWare that they have today with Banyan. Now they will, and as that develops, we will have to do the right things to make all that practical for Notes.

You support personal computers. What about the Apple Computer, Inc. Macintosh?

We announced that we're working on it, but we haven't announced availability.

What about Unix environments, and minicomputers and mainframes?

Part of what is interesting about a Unix server version is the ability to scale up to larger environments. I don't see it as a high priority to port into the mainframe environment in general. After all, we are talking about a downsizing here — taking information and decentralizing it, making it available to the users.

Within the platforms you support, what plans do you have to improve the functionality and increase the performance of the product?

We're spending a lot of effort on improving infrastructure, improving performance and expanding limits, so that it will scale more to larger communities. Some companies eventually want to take this to 100,000 users, so we want to be able to support them.

Isn't cost a barrier to entry?

Not really. A package for $62,500 gives you 200 licenses, plus five days of on-site help from a systems engineer to do some installation or one-on-one training to help prototype your applications and get you started. It comes to about $300 a user but includes the support and the sales cost for an education-intensive product. The payback is obviously larger [as] more users are installed.

What are some milestones that you want to achieve with Notes during the next few years?

We think of three major directions in terms of functionality. We need to have a broad platforms story. Right now, we have Windows and Presentation Manager, and we're adding the Macintosh. We've talked about the fact that we're going to Unix next. Another area we are focusing on is connectivity. We need to fit into communications infrastructures so we're trying to gateway to everything: every mail system, mini, mainframe, LANs, public and private networks, faxes and pagers.

Do you see Notes as almost a layer between the network operating system and applications?

Some of our customers are really looking at it that way right now. I think what we're seeing here is a layer that enables a whole set of additional functionality and applications, and is practical enough that people embrace it on a wide scale. It could become the standard. That's our vision for it — that it does become a communications infrastructure for companies. We really see that Notes can provide the layer that enables people to work together more effectively in a wide variety of applications.

EDI in the auto industry

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they are well on their way.

How costly is it to migrate to standards?

It was very costly. I don't think we fully understood the best way to approach the migration. Since we reimplemented the same programs using new standards, we spent money with very little immediate value. However, the long-term value is that migrating to standards has allowed our entire supply base to come on-line.

We never fully explored whether we could have operated in [proprietary and X12] environments. There were cases where we had to implement new [X12] transaction sets. But when we just created an X12 response to a proprietary transaction, I'm not sure we gained anything. But that's water under the bridge.

What unexpected problems did you confront in migrating to standards?

We grossly overestimated the ability of our suppliers to understand our EDI programs and the ability of the software industry to respond to the needs of our suppliers. I don't think we had formed a tight enough partnership between these three groups. We didn't understand one another's roles, responsibilities and needs.

The automakers wanted to bring our suppliers on-line, but we didn't want to write the software to make it happen. So we allowed the software industry to develop the code. But we didn't write clear enough specifications, and the quality of the product we got back wasn't up to par.

The AIAG has encouraged EDI vendors to form their own subgroup [of AIAG's EDI Implementation Planning Workgroup] so they can start discussing their own common problems. We don't want to tell them what to do. But if they want to be in this business, they ought to understand it more clearly.

How receptive is the auto industry to EDI for Administration, Commerce and Transport (EDIFACT) standards? Is there a sense that EDIFACT could force companies to undergo another costly migration to a new set of message formats?

My guess is that both EDIFACT and X12 will be working out of the same set of dictionaries, but the messages might be slightly different.

Alignment will happen as a function of version releases over the years. For example, when we decide to implement a new transaction set for purchase orders, we will at the same time decide whether to adopt the EDIFACT message set. But I don't think we will do any full-scale conversions. It's too expensive, and it's not value-added.

We will probably modify our sytems to handle both EDIFACT and X12. So when an international message is most appropriate, that's what we'll provide. And where a local message is most important, we will stay in the X12 environment.

We will do a lot more planning this time; I'll tell you that.

Letters

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ning to back up these cables only via satellite. By contrast, AT&T has laid out plans to back up its primary international fiber links with other fiber routes.

Overcoming obstacles

Your editorial "The class issue in open systems must be resolved" (*NW*, April 1) accurately identifies two obstacles users encounter when making a decision to move toward open systems: lack of migration plans and lack of a business case for an open information architecture.

Corporation for Open Systems International (COS) members are addressing both obstacles through projects in their requirements committee and the User Alliance for Open Systems, a COS requirements interest group.

The requirements committee is preparing an open systems planning and transition guide, while the User Alliance is developing an open systems business case. Members working on these projects include representatives from user and vendor companies.

The results of these projects should provide organizations with excellent guidance for overcoming the aforementioned obstacles.

The guide's purpose is to provide users with generic strategies and plans to migrate from a proprietary architecture to one of open systems. The committee also intends to include open systems procurement language in the guide.

The authors of the business case address topics such as cost and benefits, critical success factors and decision evaluation factors for open systems. This information is crucial to developing a sound case for moving resources to open systems.

COS invites interested parties to participate in these important projects. Anyone interested in more information can contact me at COS by calling (703) 883-2723.

Ed Albrigo
Director of engineering services
Corporation for Open Systems International
McLean, Va.

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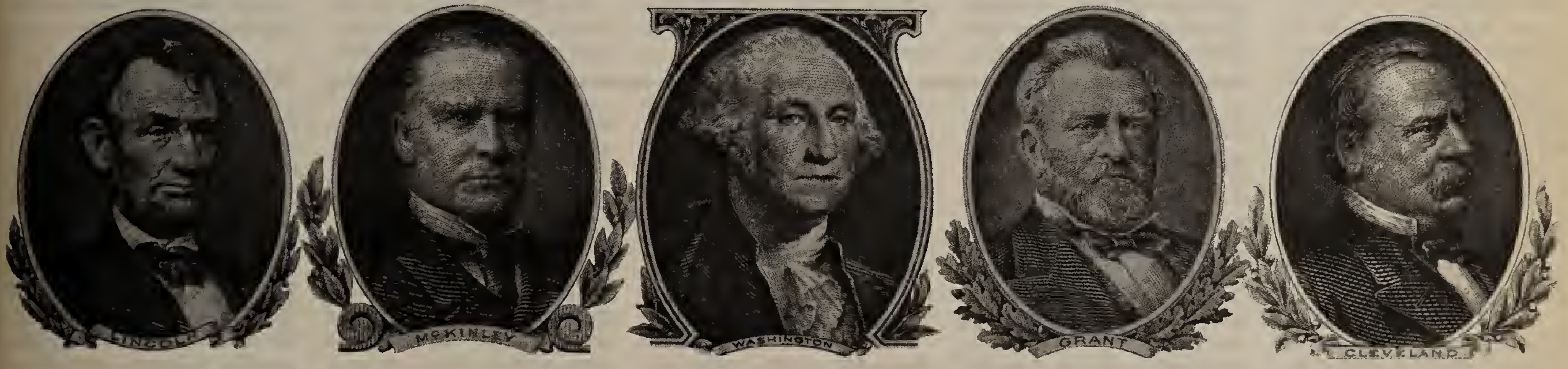

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Project forces N.E. Tel to fiber

continued from page 2

day, include some 260 cables supporting about 4,800 fiber miles and more than 200,000 copper conductor miles.

As part of New England Telephone's project, network traffic among central office switches in downtown Boston will be shifted onto a new fiber network being built about 12 miles from the construction site. Local-loop circuits to user sites will be moved in stages as the new highway is built.

The highway project has presented the carrier with technical challenges and users with concerns about network uptime. But the project, dubbed Big Dig, has also provided the impetus for New England Telephone to upgrade its aging, mostly copper network to fiber, giving users' new routing options and providing support for new advanced services.

"The project presents us with a unique opportunity to build a permanent diverse [fiber] path and increase our capacity," said Earle Jenkins, director of operations for New England Telephone's Central Artery Division. The company hopes to start the upgrade when the mainline Central Artery construction begins in early 1992 and finish the task as quickly as possible.

User concerns

New England Telephone established its Central Artery Division in 1988 to prepare for the highway project and address customer concerns about how their nets would be affected by the construction. Some 200 customers, including Fidelity Investments Co. and the Federal Reserve Bank of Boston, have visited the division's customer presentation center since it opened.

"We've visited with New England Tel numerous times to understand how it's working to ensure network availability," said Bill Maybaum, vice-president of telecommunications at Fidelity Investments, which uses hundreds of the carrier's circuits at its eight sites here.

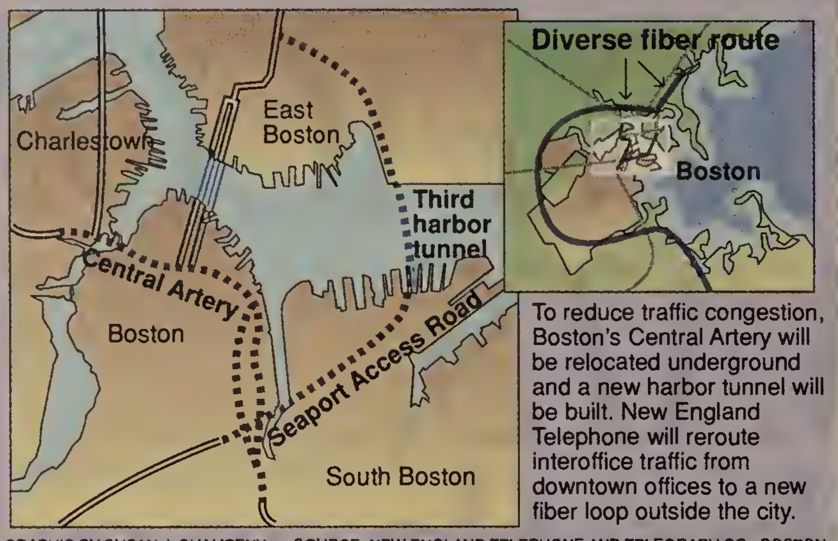
"We want to be prepared to take advantage of any new datacom services enabled by fiber deployment, too," he said.

The project's impact on utilities was the top concern of local businesses surveyed by a business task force, said Elizabeth Knight, an area operations manager for the carrier's eight-employee Central Artery Division. That concern is justified because the current net intersects the path of the new highway in nearly 40 locations.

"If a project this size took place 10 years ago, our clients would probably have been kept in the dark on a lot of these issues," she said. "In today's competitive environment, however, we've got to handle things differently by being proactive with customers."

New England Telephone will shift a large portion of the traffic currently carried between its downtown central offices to a new fiber net strung between 14 central office switches on the outskirts of the city. This network, which will be largely funded by the federal government, will cost about $17 million and take three months to build.

Boston's big dig



To reduce traffic congestion, Boston's Central Artery will be relocated underground and a new harbor tunnel will be built. New England Telephone will reroute interoffice traffic from downtown offices to a new fiber loop outside the city.

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: NEW ENGLAND TELEPHONE AND TELEGRAPH CO., BOSTON

Learning from experience

Officials of New England Telephone decided to relocate the carrier's facilities after visiting several cities that recently undertook major construction projects. The carriers serving those cities chose to leave their networks in place, an unwieldy and dangerous setup, Knight said.

Local-loop traffic will be moved on more of a piecemeal basis dictated largely by the highway construction schedule.

The circuits, which currently look like a maze, will be laid in new "corridors" provided by the state that will allow for the orderly layout of other utility facilities as well.

Bob Bentley, an area operations manager in New England Telephone's Central Artery Division, said users will not even notice when the carrier swaps their voice circuits to the new local-loop facilities.

However, customers will be contacted before the cutover of new data circuits, he said, since "even a tiny hit could ruin a data transmission."

Early user lauds service

continued from page 1

"The only surprise was that everything has gone so well."

Announced in March, WilPak is the first available public frame relay service. It is based on StrataCom, Inc. IPX 32 fast packet multiplexers, which have been installed in eight cities in WilTel's 11,000-route-mile digital microwave and fiber-optic network.

Although WilPak requires a T-1 access line, a customer can assign any number of channels on the link to support the frame relay service.

The service supports permanent virtual circuits, meaning paths are fixed between end points and packets always follow the same route.

Hub sites

Before using WilPak, Convex operated a 25-node T-1 backbone supporting field sales offices and regional technology centers with one or more Ethernet LANs.

Now Convex has designated its three largest sites as hubs into which smaller sales offices feed traffic through WilPak. These sales offices are linked to WilTel points of presence, which are linked to the hubs via T-1 access lines. By using WilPak, the company has been able to dramatically reduce leased-line costs.

The remaining sites will use existing T-1 lines and multiplexers to support a private frame relay network. The private net will be linked via gateways to the public frame relay service.

Convex uses WilPak service to carry traffic between computers on Ethernet LANs at speeds of 1.024M bit/sec. "Frame relay service is ideal for LAN-to-LAN connectivity anytime the traffic is bursty," Gibson said.

Because frame relay uses bandwidth more efficiently than traditional time-division multiplexing, there has been no perceptible change in throughput since Convex moved from full 1.536M bit/sec speed, Gibson said.

"Pessimistically, you'd expect there would be a lower overall throughput on the network. But the throughput and response time haven't changed," he said.

The frame relay service provides visualization stations located at the sales offices with access to supercomputers here, Gibson said. The interconnections enable Silicon Graphics, Inc.'s Iris and other workstations to perform graphical simulations of wind flowing over the wing of a plane or a car crashing into a wall, for example.

The company uses visualization stations to demonstrate the capabilities of Convex's supercomputers to prospective customers and business partners, Gibson said. Convex also uses the frame relay service to support order entry, electronic mail and administrative applications.

Tying in small sites

Because WilTel charges users a low, flat monthly rate for WilPak and it does not carry a usage element, Convex has been able to tie in some smaller remote sites via WilPak.

"A site had to spend $3,000 or more on monthly data communications costs to be connected [via] leased line to the network," Gibson said. "With WilPak, that monthly minimum drops below the $1,000 mark."

Prior to WilPak, smaller sites would use a public X.25 service or dial-up lines to reach Convex's headquarters here.

"The other side of this is the way they charge for the service," Gibson said. "It's not mileage-sensitive, so if you're paying for long-haul services, you immediately change to a fixed flat rate independent of the mileage between the two end points."

Gibson declined to divulge specific savings realized from moving from the T-1 lines to WilPak.

Convex is looking to WilTel to manage the frame relay service.

"To us, WilPak looks like any other carrier service that WilTel offers," Gibson said. "We don't have any direct visibility at this time into the StrataCom equipment on their side of the network, so we rely on them to manage the net and keep it up and running."

Infonet airs global service

continued from page 1

very, very successful."

Initially, Infolan will support Transmission Control Protocol/Internet Protocol and source-routing protocols for token-ring nets. Support for Digital Equipment Corp.'s DECnet protocols and Novell, Inc.'s Internetwork Packet Exchange (IPX) will be added in early 1992.

Infolan service is slated to begin next month in Belgium, Finland, France, Germany, the Netherlands, Sweden, Switzerland, the U.K. and the U.S. It will begin in the fourth quarter of 1991 in Canada, Hong Kong and Japan, and in the first quarter of 1992 in Australia and Denmark.

Jean Noel Moneton, Infonet's vice-president for communications services, said the firm plans to supplement Infolan with public frame relay service next year. He declined to detail those plans.

Cisco routers

Under the Infolan service, Infonet will install a two-port Integrated Gateway Server multiprotocol router from Cisco Systems, Inc. on a user's premises that will link a user's LAN or other device to a local Infonet node. Wide-area traffic will flow over a subnet of Cisco routers on Infonet's backbone to the end node.

Infonet will manage a users's IP addresses and monitor network faults. The company will charge a flat monthly fee for Infolan service that will vary based on the speed, number and location of access ports.

For example, the typical charge for a mesh Infolan network with five 9.6K bit/sec access ports in North America and Europe will cost $11,000 to $16,000 per month. A similar Infolan net with 19.2K bit/sec access would cost $15,000 to $20,000 per month, while a net with 56K and 64K bit/sec access would cost $24,000 to $28,000.

By contrast, the monthly charge for a private net of 56K bit/sec circuits in a star topology from New York to Chicago, London, Paris and San Francisco would be about $15,000. That does not include equipment, local access or personnel expenses.

With those costs factored in, Infonet said Infolan is priced competitively with private nets. Infolan will also be more reliable than a star-topology private net.

Analysts said Infolan could be a big hit because no other high-speed internet service is available with such a broad global reach. A handful of firms, including Performance Systems International, Inc. in Reston, Va., offer public, router-based internet services, but only domestically and primarily to users of the Internet.

Even BT North America, Inc.'s and US Sprint Communications Co.'s new frame relay services will have a smaller global reach than Infolan, analysts said. And Infolan's reach could expand even farther than originally planned because it will be linked with router-based internet services from carriers in Finland and other countries.

The META Group's Gonzalez and other analysts said Infolan will also have an edge over frame relay because it will rely on time-proven technology. Frame relay is likely to suffer from the implementation bugs that plague most new technologies.

Two companies that plan to begin using Infolan in June — Kredietbank, N.V. of Brussels, Belgium, and Mips Computer Systems, Inc. of Sunnyvale, Calif. — said they were offered prices for Infolan services that are competitive with private-line pricing.

But Ken McGee, program director at Gartner Group, Inc., a consultancy in Stamford, Conn., cautioned that Infonet is not devoting full-time personnel to monitoring Infolan services and that, as a result, response time to outages could be slow.

IBM stops selling PROFS

continued from page 4

PROFS users to OfficeVision/VM last year. "If we didn't tell users [we were converting to OfficeVision/VM], they wouldn't have known."

According to users and consultants, IBM's move away from PROFS reflects the rise of client/server processing. OfficeVision products help users share applications and exchange data across mainframes, minicomputers and local networks.

"The decision [to stop selling PROFS] is an indication that mainframe-only messaging is a thing of the past," said Walter Ulrich, director of the consultancy Arthur D. Little, Inc. in Los Angeles.

David Atlas, senior analyst for electronic messaging at International Data Corp., a market research firm in Framingham, Mass., said the number of LAN electronic mail users is growing rapidly and by 1992 will eclipse the number of users of mainframe message systems, such as PROFS.

Don Price, corporate PROFS administrator at Texaco in Tulsa, Okla., said IBM's evolution to OfficeVision fits with many users' plans to downsize platforms and adopt client/server architectures.

Other users agreed. Emily Liskow, a systems analyst at Eastman Kodak Co. in Rochester, N.Y., said OfficeVision/VM positions Eastman Kodak to get into client/server computing in the near future.

"While we don't gain much from the first version of OfficeVision, it is a stepping-stone for the future," Liskow said.

But some users believe they have to migrate to OfficeVision/VM sooner than they would like. Price said Texaco had originally planned to convert its 13,000 PROFS users to OfficeVision next year, when OfficeVision is enhanced with additional features. Currently, he said, OfficeVision offers little additional value compared to Texaco's customized PROFS system.

However, Texaco has decided to convert about 2,000 PROFS users to OfficeVision/VM this summer. These users, who are part of a business unit that is growing rapidly and needs additional mainframe capacity, had to be converted to OfficeVision because Texaco will no longer be able to obtain a license for PROFS.

"It's frustrating to have to purchase OfficeVision now when our PROFS system offers all the features and functions our users need," Price said.

Wells Fargo Bank's Hudnall said converting from PROFS to OfficeVision/VM is not a monumental task but is more work than upgrading to a new release.

Certain new features need to be modified in order to work in each company's environment, Hudnall said.

IBM has compiled a cookbook of advice gleaned from internal IBM conversions to OfficeVision/VM to assist users in implementing OfficeVision. The guide can be obtained from any IBM branch office.

Verity software eases access

continued from page 2

product manuals stored at its Scotts Valley, Calif., headquarters. The company already uses TOPIC to enable local customer service representives to retrieve product documentation to help solve customer problems.

Without TOPIC Partition Server, Borland would have to ship disks with updated copies of documents to each remote site running TOPIC. "Tying overseas offices into an on-line wide-area network makes more sense than shipping disks with 100 or 200 [megabytes] of data back and forth on a weekly basis," said Bruce Runyan, Borland's MIS director.

TOPIC Partition Server includes client code that runs on Sun Microsystems, Inc. or Digital Equipment Corp. Unix-based workstations. The client uses the Transmission Control Protocol/Internet Protocol to create a peer-to-peer link with a remote Sun or DEC Unix-based system running the server code.

Later this year, Verity will upgrade the software to run on other vendors' Unix implementations as well as VMS-, DOS-, OS/2- and Apple Computer, Inc. Macintosh-based clients and servers.

Through the peer-to-peer link, the client instructs a server to search TOPIC data bases, called partitions, on a remote local-area network. Partitions, which contain a description of all documents based on key words and topics, are distributed to disks on LAN workstations or servers.

The system running TOPIC Partition Server downloads copies of all local partitions, scans them and extracts descriptions of documents that meet the search criteria. That list is passed back to the client.

With earlier versions of TOPIC, workstations running TOPIC Retrieval Client used the file sharing capabilities of network operating systems to download partitions from net servers or other workstations. That format limited users to searching only local partitions.

"Basically, this lets users decide where to put computing power — on the desktop, on the LAN or somewhere else in the organization," said Peter Kastner, vice-president of the Aberdeen Group, a consulting and market research firm based in Boston.

The announcement shows Verity has been listening to its customers, said Gerald Michalski, vice-president of New Science Associates, Inc. a consulting firm in Southport, Conn. "Users have been telling Verity 'We need to form an enterprisewide document retrieval system but we can't do that with a product optimized for LAN environments only,' " he said.

TOPIC Partition Server will ship June 1 as an option to TOPIC 3.0. The software is available under special contract from Verity's Consulting Services for a negotiated price. TOPIC 3.0 will also ship June 1 and will costs between $15,600 and $150,000, depending upon the number of clients. TOPIC Retrieval Client costs $795.

McDATA touts flexibility

continued from page 2

The largest 7100, the Model 10, supports as many as 128 3270 ports and 34 ASCII ports. The largest IBM 3174 supports half as many 3270 ports and 10 fewer ASCII ports.

McDATA's 7100 Model 20 supports 64 3270 and 10 ASCII devices, while the Model 60R has 32 3270 and three ASCII ports.

When configured as local controllers, Models 10 and 20 support one or two host interface adapters, or as many as four adapters when outfitted with McDATA's host interface controller.

IBM controllers support a maximum of three hosts, and that requires the use of two IBM Concurrent Communications Adapters.

> McDATA enhanced its controller software to give each 7100 model support for Ethernet.
>
> ▲▲▲

As with IBM's 3174, each terminal attached to a 7100 controller can support as many as five simultaneous host sessions. But the 7100 can support that feature on any terminal, not just IBM Distributed Function Terminals. IBM offers the same feature only under special request, said Paul Sikorski, McDATA's product manager for the 7100s .

In addition, with an IBM 3174 Model 11R, only 32 of the maximum 64 3270 users can access multiple hosts, he said. On the 7100 Model 10, all 128 3270 terminals can have as many as five simultaneous sessions with as many as four hosts.

McDATA also enhanced its controller software to give each 7100 model support for Ethernet. That upgrade, coupled with support for DEC's Local Area Transport (LAT) protocol on all models, enables 3270 terminals or ASCII devices attached to a 7100 to communicate with a DEC VAX. The 4174 44R supported LAT only for 3270 devices.

The 7100 software option that supports LAT also provides the terminal emulation required to let 3270s access VAX hosts or to let ASCII terminals emulate 3270s to access IBM hosts.

"The closest thing IBM can do to that is provide [asynchronous] output from its 3174, and then you'd have to run that into a terminal server," said David Passmore, a partner with Ernst and Young's Network Strategies, Inc., a consultancy in Vienna, Va. "I could see that as being very nice to have in a multivendor shop."

Other features of the new 7100s include improved response time by supporting remote links of up to 128K bit/sec half duplex or 64K bit/sec full duplex, Sikorski said. IBM supports 64K bit/sec full duplex only when configured as a local-area network gateway to a wide-area net.

The LinkMaster 7100 controllers will be available June 3. Prices range from $5,635 for a 16-port single-host configuration to $29,935 for a 128-port single-channel configuration. Additional host and LAN connections are extra. LAT support ranges from a price of $3,500 for as many as 35 devices to $8,000 for 162 devices.

Users support carrier freedom

continued from page 6

Coors Co., The Dial Corp., The Dow Chemical Co., General Electric Co., Georgia-Pacific Corp., Holiday Inns, Inc., Hospitality Franchise Systems, Inc. (Howard Johnson and Ramada Inn, Inc.), Kemper Financial Services, Inc., Midway Airlines, Inc., PaineWebber, Inc. and the University of Texas.

In general, users said they are frustrated by doing business with AT&T, citing delays in obtaining service, an inability to get new services folded in under existing Tariff 12 deals and uncertainty on the part of AT&T salespeople about what they can legally promise users.

"You want to know when you shake hands [with a carrier] that you have a deal," said Theodore Hockman, senior vice-president at Kemper Financial Services. He said officials at his firm have had to become too involved in the regulatory process in order to purchase telecommunications services — the company's largest expense other than labor costs.

Douglas Patterson, senior vice-president of reservations for Hospitality Franchise Systems, a firm representing 1,000 hotel owners, said, "We don't feel like we need the FCC. We're all big boys and can negotiate on our behalf."

Other telecommunications managers agreed that their companies had missed out on savings by having to wait for the FCC to clear AT&T's tariff filings. Ray Rourke, corporate manager for information services and telecommunications at Boise Cascade, estimates that his firm lost about $2 million in savings during the 10 months it took to obtain a Tariff 12 deal.

Despite their contentions that AT&T must be allowed more regulatory freedom in order to adequately address users' needs, neither Stanley Welland, manager of corporate telecommunications at GE, nor Rourke said they would move immediately to roll over their Tariff 12 deal to a private contract.

NETWORK WORLD

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Expert net tool getting smarter

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center services for McKesson, a large wholesale distributor of pharmaceutical and dry goods here, said McKnowledge uses simple rules that feed off the vast data base of problems and resolutions stored in Information Management.

"Information Management contains every problem that we've ever had on the system, on the network, on applications, on whatever," said Turner, who will give a presentation on McKnowledge on June 3 at the annual International Communications Association conference in Anaheim, Calif.

> "An expert system doesn't learn. You have to teach it everything you know."

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What makes McKnowledge different from traditional expert systems is that its abilities and experience base will expand while its rules stay virtually the same.

McKnowledge's rules identify alerts or help-desk problems as they arrive in Information Management by code numbers assigned to the type of problem or its symptoms. It then uses those codes to search for similar problems in its experience base.

That experience base, stored on a mainframe under IBM's DB2 relational data base management system, is a subset of McKesson's Information Management data base.

Each night, the company runs a batch job to upload to the experience base key codes along with brief descriptions for any problems and accompanying solutions entered into Information Management that day, thus increasing McKnowledge's experience base.

So without changing or adding to its rule base, the range of problems McKnowledge can handle constantly expands. Typically, expert systems require users to write new rules to deal with new problems.

"An expert system doesn't learn. You have to teach it everything you know about network and system problem determination, and then it turns around and tells you what you just taught it," Turner said.

A key to McKnowledge's success will be the NetView Bridge, which IBM announced last September. The bridge forges an LU 6.2 link between NetView and Information Management to automatically open trouble tickets, which today is a manual process. That is important because an error in entering alarm or symptom codes to Information Management could result in an erroneous McKnowledge search, he said.

Once a problem is sent to Information Management, a McKesson-written program automatically calls the host-based expert system. For the prototype, that expert system was built using IBM's Expert System Environment (ESE), an older IBM tool for developing expert system applications. The company will use AICorp's Knowledge Base Management System for the production version because it is easier to use than ESE, Turner said.

McKnowledge's search of its DB2-based experience base is conducted via an SQL search.

If it finds that a similar problem has occurred in the past, McKnowledge uses an LU 6.2 session to forward data on the last 20 occurrences to an operator and flashes a message on the operator's management console. That will arrive at about the same time the NetView alert appears, Turner said, so the operator will get both an alert and suggested resolutions.

Today, operators get only the alert and have to conduct the search on their own, which only the most experienced do well.

Operator consoles are based on token-ring attached OS/2 workstations, which run software McKesson developed to automate many routine functions ("User automates help desk, net control with IBM tools," *NW*, Nov. 13, 1989). With that tool, Turner said, management personnel should be able to add value to McKnowledge by writing routines that automate responses to problems that occur frequently.

> "My objective is to grow the work load by a factor of 10," Turner said.

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For example, if an operator notices that the last three times a problem occurred a particular series of commands was used to correct it, he could write a routine that captures those commands and automatically reissues them whenever that problem occurs. That approach will help McKesson reach its productivity goals.

"My objective is to grow the work load here by a factor of 10 and not increase the head count any more than a factor of two," Turner said. "We're exceeding our growth objectives and also exceeding our head count objectives."

NetWare to be LAN standard

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ny uses a variety of LANs but primarily IBM's LAN Server and the older IBM PC LAN Network. It also uses Microsoft's LAN Manager, Ungerman-Bass, Inc.'s LAN Manager and some NetWare nets.

No single large contract award is expected as a result of the decision to back NetWare, nor are there plans to systematically replace existing LANs with NetWare.

Chevron, a $46 billion company, says it is too big to impose a rigid standard on users. As a result, areas of the company with unique applications will still be able to pursue alternative networks or systems. But one source within the company said NetWare will be the first recommendation.

Besides backing NetWare, the company is promoting a plan calling for the coexistence of new NetWare LANs with the existing installed base of LANs.

Ironically, one of the primary reasons Chevron selected Novell was for support, an area for which Novell has long been criticized in the past. In fact, Novell recently crafted a Technical Service Alliance in an effort to rectify some of the service problems commonly associated with multivendor installations.

Support is critical to Chevron because it is actively downsizing mission critical applications to personal computer LANs and wants "IBM-type service" for the networks. If Chevron opts to contract with IBM for net support, the service would probably be provided by Novell initially while IBM's technicians are brought up to speed on Novell products.

Chevron, which is using Oracle Corp.'s relational database to develop many of the new downsized applications, was also encouraged in its decision to go with NetWare by the recent release of the Oracle Server product written specifically for NetWare 386.

Another factor behind the decision was the ability to use NetWare networks to integrate a range of operating systems and computers, which includes IBM mainframes, Digital Equipment Corp. VAXes, Apple Computer, Inc.'s Macintosh and Unix workstations.

Chevron was also influenced by the availability of NetWare-compatible products from a huge number of hardware and software developers. A group within information systems (IS) operations will now focus on evaluating these products for use on the NetWare platform.

At this week's conference of personal computer coordinators from Chevron sites around the country, one day will be dedicated specifically to LANs. It is during these presentations that IS officials plan to outline the LAN strategy to the estimated 600 Chevron attendees.

In addition, Chevron has set up an exposition at the conference and invited vendors to showcase their products.

Users praise multivendor plans

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TSA-type program of its own, sources said.

Multivendor service and support programs surfaced in the mid-1980s and have been evolving during the past few years. The multivendor services market totaled about $500 million in 1990 and will grow at a rate of about 8.5% per year through the end of 1994, according to Ledgeway/Dataquest, a Lexington, Mass., market research firm.

Current programs typically position one vendor as the single point of contact to provide or coordinate service and support. Some vendors, such as HP and Digital Equipment Corp., train their field service staffs to handle problems with their own products as well as hardware and software from other vendors.

In other programs, the primary contact serves as an administrator that handles problems with its own products and works behind the scenes with other vendors to solve problems involving their equipment. IBM often works this way, observers said.

Where the market may be headed is toward TSA-like programs. Unlike traditional multivendor support programs, the TSA approach encourages multiple vendors to collaborate on solving problems.

"We're going to see a move toward multiple vendor support in which a team of vendors works to solve a problem," said Jeff Kaplan, director of Service Industry Research Programs at Ledgeway/Dataquest.

While service already accounts for as much as 40% of some vendors' revenue, they still have an incentive to team up with rivals. For one, many customers are demanding a one-stop shopping approach to service. Also, the programs give vendors an opportunity to solidify account control and extend the technical and geographic depth of their service units cost effectively.

Roger Costa, general manager for HP's Product Support Division, said users are the driving force behind vendors starting and improving their multivendor service programs.

"Our customers are committed to open systems and expect products not only to play together, but that vendors will have cooperative working relationships that can be called upon when problems arise," Costa said.

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